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Design and Operation of the National Survey of Children with Special Health Care Needs, 2005-06

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Contents

Abstract

Objectives—This report presents the development, plan, and operation of the National Survey of Children with Special Health Care Needs, a module of the State and Local Area Integrated Telephone Survey, conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention. This survey was designed to produce national and state-specific prevalence estimates of children with special health care needs (CSHCN), describe the types of services that they need and use, and assess aspects of the system of care for CSHCN. Funding for this survey was provided by the Maternal and Child Health Bureau, Health Resources and Services Administration.

Methods—A random-digit-dial sample of households with children less than 18 years of age was constructed for each of the 50 states and the District of Columbia. All children in each identified household were screened for special health care needs. If CSHCN were identified in the household, a detailed interview was conducted for one randomly selected child with special health care needs. Detailed interviews were also conducted for a separate national sample of children, to generate estimates for children without special health care needs and permit comparisons with CSHCN on all study measures. The respondents were parents or guardians who knew about the children's health and health care.

Results—A total of 192,083 household screening interviews were completed from April 2005 to February 2007. This resulted in 40,840 completed special-needs interviews and 6,113 completed interviews for children in the comparison ("referent") sample. The weighted overall response rates were 56.1% and 50.3% for special-needs and referent-sample interviews respectively.

Keywords—child health services, children with disabilities, chronic disease, health status indicators, health surveys, needs assessment, pediatrics

Introduction

To help states develop and provide coordinated systems of care for children with special health care needs (CSHCN), Title V of the Social Security Act establishes a block grant system that provides funds and creates federal/state partnerships. State-level data regarding the need for, use of, and barriers to care are necessary for accurate evaluation of these programs. The National Survey of Children with Special Health Care Needs—first conducted in 2001—was designed to produce prevalence estimates of CSHCN using a standard battery of screening questions, to describe the types of services that these children need and use, and to assess possible areas of improvement in the system of care for CSHCN (1,2). This information was made available at the state level and was collected in a manner that enabled comparison across states and nationally.

The National Survey of CSHCN was conducted for a second time in 2005 and 2006. This report documents the 2005-06 design and procedures.

State and Local Area Integrated Telephone Survey (SLAITS) Program

Both the 2001 and 2005-06 National Survey of CSHCN were conducted as part of the State and Local Area Integrated Telephone Survey (SLAITS) program. SLAITS, sponsored by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS), is a broad-based, ongoing survey system available at national, state, and local levels to track and monitor the health and well-being of children and adults. Surveys conducted as part of the SLAITS system use the same sampling frame as the CDC's National Immunization Study (NIS) and immediately follow the NIS in selected households, using its sample for efficiency and economy. In the course of identifying households with children between 19 and 35 months of age, the NIS uses a random-digit-dial (RDD) sample and computer-assisted telephone interview (CATI) technology to contact over one million households each year and determine if they contain age-eligible children. The process to identify this large number of households—most of which are ultimately age-ineligible for the NIS—offers an opportunity to administer other surveys on a range of health- and welfare-related topics in an operationally seamless, cost-effective, and statistically sound manner.

Surveys conducted as part of the SLAITS system vary in content, duration, and sample size based on the research needs of their sponsors. Sponsors work with NCHS to establish parameters including sample size, questionnaire design, and other survey requirements. Since 2005, NORC at the University of Chicago has administered all aspects of the survey operations, including development and testing of the CATI instrument, recruiting and training interviewers, completing the targeted number of interviews, and preparing data files and final documentation.

History of the SLAITS Program

SLAITS began in 1997 with a pilot test in two States, Iowa and Washington. This pilot survey included a series of questions on health, including issues of access to care, health status, and insurance. In 1998, a SLAITS module concerning child well-being and welfare issues was

implemented using three samples: a general RDD sample of children in Texas, known Medicaid program participants in Texas, and known Medicaid or MinnesotaCare participants in Minnesota. In 2000, SLAITS fielded the National Survey of Early Childhood Health, which collected data regarding parents' perceptions of their young children's pediatric care and examined relationships between the promotion of health in the pediatric office and promotion of health in the home (3).

In 2001, SLAITS fielded the first National Survey of CSHCN, designed to collect data on CSHCN, children's health insurance coverage, and uninsured children from low-income households (1,2). With a target of 750 special-needs interviews per state, the 2001 National Survey of CSHCN was the first SLAITS study to take full advantage of the NIS sampling frame to produce state-level estimates. In 2003, SLAITS fielded the National Survey of Children's Health, which examined the physical and emotional health of children ages 0-17 years of age (4). In 2003, SLAITS also fielded the National Asthma Survey, which examined the health, socioeconomic, behavioral, and environmental predictors that relate to better control of asthma.

The 2005-06 National Survey of CSHCN, documented in this report, marks the second time that SLAITS has been used to conduct this survey.

Background

The National Survey of CSHCN was funded by the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA). MCHB, established in 1935 as part of Title V of the Social Security Act, protects the health of mothers and children by developing programs and systems of care for these populations.

The 1989 Omnibus Budget Reconciliation Act enhanced the Maternal and Child Services Programs' mission with specific provisions for CSHCN, including improved access to care to be monitored by state agencies (5). Today, Title V is administered by MCHB using block grants to create federal/state partnerships to provide family-centered, community-based coordinated systems of care for CSHCN. A minimum of 30% of block grant funds must be used to support programs for CSHCN, and specific steps must be taken to improve service delivery for these children and their families. States have considerable flexibility in determining the services to provide and the manner in which they are provided.

To guide the development of appropriate services for children with special needs, MCHB established a work group whose mission was to create a broad and inclusive definition of what constitutes special health care needs. After considering condition-list and functional status-based approaches, the work group decided to adopt a definition based on increased service needs and to include at-risk children to facilitate program planning (6,7). The resulting definition was:

> Children with special health care needs are those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally. (6)

Using data from the 1994 National Health Interview Survey on Disability, researchers established an initial special health care needs prevalence rate among children of 15-20% (8). The at-increased-risk population mentioned in the above definition was not included in this

estimate as there is no accepted approach to identify these children. In fact, there was no one accepted method to identify CSHCN. To augment ongoing research on this subject, the pretest phase of the first National Survey of CSHCN used two different batteries of questions to screen households to identify CSHCN (9,10). Ultimately, the CSHCN Screener was adopted for use in the National Survey of CSHCN.

The CSHCN Screener was developed as part of the Child and Adolescent Health Measurement Initiative, which was originally part of FACCT (Foundation for Accountability), and is now housed at the Oregon Health and Science University. The CSHCN Screener includes five stem questions on general health needs that could be the consequence of chronic health conditions (e.g., need for special therapies or need for prescription medication). If a child currently experiences one of these consequences, followup questions determine whether this health care need is the result of a medical, behavioral, or other health condition, and whether the condition has lasted or is expected to last for 12 months or longer. Those with affirmative answers to the stem and both followup questions (see table A) are considered to have a special health care need (9).

Using this screener and the 2001 National Survey of CSHCN, researchers estimated that 12.8% of children had special health care needs. Other surveys have found prevalence rates as high as 19.3%. Despite these differences, the characteristics and health needs of CSHCN have remained relatively stable across surveys and data collection years (11).

Serving CSHCN requires a broad-ranging system of health and related types of care. These services may include specialty physician care, therapeutic services, family support services and care coordination, durable equipment and assistive devices, a variety of education-related services, and transportation services (6). Although states vary greatly in the manner used to provide these services, virtually all provide them to some extent. Accurate assessment of use and barriers to needed care are critical to program planning and evaluation. The 2001 National Survey of CSHCN was the first survey to use comparable methods in every state to provide the information necessary to accurately assess state activities and program needs.

National Survey of Children with Special Health Care Needs

The 2005-06 National Survey of CSHCN had the same goals as the 2001 survey, with the added benefit of providing data to allow comparisons over time. The major research questions the National Survey of CSHCN was designed to address were:

- What is the prevalence of special health care needs among children under 18 years of age in each state and the nation?
- Are their special health care needs and the concerns of their families being addressed?
- What is the quality of primary, specialty, and ancillary care that CSHCN receive?
- Are CSHCN receiving comprehensive care in a medical home?
- What factors are associated with the receipt of better quality, more comprehensive care?
- Do families of CSHCN have adequate insurance to pay for the services that CSHCN need?
- What is the impact of the child's health condition on the family?
- From whom are CSHCN receiving needed care coordination services?

Three additional study modules, described below, examined the following research questions:

- To what extent do CSHCN differ from children without special health care needs with respect to the major research questions identified above?
- Did CSHCN affected by Hurricanes Katrina or Rita receive the care and special arrangements that they needed?
- How do influenza vaccination rates for CSHCN compare with influenza vaccination rates for children without special health care needs?

Referent Sample

The basic design of the National Survey of CSHCN calls for collection of detailed health and health care information for CSHCN only. However, the 2005-06 National Survey of CSHCN also included a sample of children irrespective of special-needs status called a "referent sample." (The sample of CSHCN selected as part of the basic design of the survey is called the "main sample.") Details about the development, plan, and operation of the referent sample are interspersed in this report with similar details about the main sample.

The referent sample serves two distinct purposes. One purpose of the referent sample was to produce national and regional estimates on all study measures for children without special health care needs. To evaluate differences between CSHCN and children without special health care needs, researchers can compare main-sample estimates for CSHCN with referent-sample estimates for children without special health care needs.

The second purpose of the referent sample was to produce national and regional estimates of the prevalence of CSHCN using a different screening methodology. For main-sample households with multiple children, the CSHCN Screener was administered simultaneously for all children (e.g., ''Do any of the children need or use medications prescribed by a doctor? If yes, who?''). In contrast, for referent-sample households with multiple children, one child was randomly selected and the CSHCN Screener was administered for that child only (e.g., ''Does Jacob need or use medications prescribed by a doctor?"). For main-sample and referent-sample households with only one child, the screening method was the same. By using a screening methodology different from the main sample, the referent sample provided a mechanism to assess varying estimates of CSHCN prevalence depending on screening methodology (11). Data for CSHCN from the referent sample serve a methodological purpose only and have not been publicly released. However, interested researchers may contact NCHS (slaits@cdc.gov) to receive a data file that includes referent sample interviews for CSHCN.

Hurricane Evacuees Section

In August and September 2005, two hurricanes affected calling for the 2005-06 National Survey of CSHCN. Hurricane Katrina occurred in late August and affected Florida, Louisiana, Mississippi, Alabama, and Tennessee. Hurricane Rita occurred in late September and affected Texas, Arkansas, and Louisiana. MCHB decided to add questions to the National Survey of CSHCN interview to identify CSHCN who were hurricane evacuees and to determine if they had unmet health needs during the evacuation. The Hurricane Evacuees section was added to the

National Survey of CSHCN questionnaire for all 50 states and DC on January 5, 2006, and data collection continued to the end of the field period.

Influenza Vaccination Module

An Influenza Vaccination module, sponsored by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) in the Department of Health and Human Services (DHHS), was conducted in the second quarter of 2006 to assess influenza vaccination coverage in children with and without special health care needs, and characteristics of children who did or did not receive the vaccine in accordance with recommendations from the Advisory Committee on Immunization Practices. In addition, items were also developed to assess the health of adults in the household, as this could also indicate the need for influenza vaccinations for children. Details about this module will be included in a separate NCHS report and will not be further discussed here.

Sample Design

Like all SLAITS modules, the National Survey of CSHCN took advantage of the large number of screening calls required for the NIS. The sample design of the National Survey of CSHCN necessitated two distinct sample types: the state-based main sample and the national referent sample. The main sample was designed to screen all children in the household for special needs, and the interview was conducted only if a child with special health care needs was present in the household. The referent sample was designed as a comparison sample, with the full special needs interview administered whether or not the selected child had special needs.

To accomplish the goal of 750 completed main sample special-needs interviews in each state and the District of Columbia (DC) and 6,000 completed referent sample interviews (special-needs or non-special-needs) nationally, telephone numbers were initially selected randomly from the telephone numbers generated for the NIS screening effort. Therefore, the procedures for drawing the NIS sample were the first steps in the procedures for drawing the National Survey of CSHCN main and referent samples. However, because of the scope of the National Survey of CSHCN, there was not enough NIS sample in some states to achieve the desired number of completed interviews in the main sample. In these cases, additional sample was drawn for the purpose of administering the National Survey of CSHCN interview, but without going through the NIS first.

The next two sections describe the basic NIS sample design and serve as a non-technical description of the National Survey of CSHCN sample design and allocation procedures. Appendices I, II, and III of this report include a more technical description of the National Survey of CSHCN sample design and weighting procedures. For more detail on the NIS sample design, readers are encouraged to see chapter 2 of the *2005 Methodology Report for the National Immunization Survey* (12), which is available from NCHS. Further information regarding the NIS itself can be found in *National Immunization Survey: The Methodology of a Vaccination Surveillance System* (13) and online (http://www.cdc.gov/nis).

The National Immunization Survey Sampling Plan

The NIS was established to monitor vaccination levels of very young children within geographic estimation areas. The NIS sample was designed to produce estimates for each of 78 estimation areas in 2005 and 80 estimation areas in 2006. These nonoverlapping estimation areas encompass the entire United States, and each estimation area is within the borders of a single state. Every location in the United States is in one (and only one) estimation area. In effect, the NIS conducts separate surveys each quarter, one for each estimation area, using a common sample design. The target number of completed interviews in each estimation area reflects the goal of obtaining equally precise estimates in each estimation area. If necessary, the target for an estimation area is adjusted each calendar quarter to compensate for its total shortfall or excess in the previous quarters.

The NIS screens over 1 million households per year to identify those containing at least one child aged 19 to 35 months. These children are the primary target of immunization programs. Because less than 5% of households in the United States contain children in this age range, a large number of households are screened to identify households with eligible children. SLAITS modules use this NIS screening sample.

The NIS uses the list-assisted method of RDD (14,15). This method selects a random sample of telephone numbers from "banks" of 100 consecutive telephone numbers (e.g., 773-256-0000 to 773-256-0099) that contain at least one directory-listed residential telephone number. The sampling frame of telephone numbers is updated each quarter to reflect new telephone exchanges and area codes.

Although the number of cellular telephone users in the U.S. has increased rapidly, most households with children continue to maintain landline telephone service (16). Also, most cellular telephone users pay for incoming calls. Therefore, the NIS sampling frame excluded cellular telephone numbers in 2005 and 2006 (and in previous years).

National Survey of CSHCN Sampling Plan

The goal of the National Survey of CSHCN main sample design was to generate samples representative of the state populations of children and to obtain state-specific sample sizes that were sufficiently large to permit precise estimates of the characteristics of CSHCN in each state. Sufficient precision was defined as a maximum standard error of 10% for all point estimates greater than 15%.

To achieve these goals, state samples were designed to obtain 750 completed interviews with CSHCN. The number of CSHCN to be selected in each estimation area was determined by allocating the total of 750 children in the state to each estimation area within the state in proportion to the total projected number of households with CSHCN in the estimation area. The projected number of households with CSHCN in each estimation area was adjusted as needed based on the initial data collected from the survey. Given this allocation, the number of households that needed to be screened in each estimation area was calculated using the expected proportion of households with children under 18 years of age in the estimation area. Then, the number of telephone numbers that needed to be called was computed using the expected working residential number rate. The number of telephone numbers drawn was increased to compensate

for the fact that not all respondents would agree to participate and, therefore, there would be some degree of nonresponse.

The goal of the National Survey of CSHCN referent sample design procedures was to generate samples representative of the population of children with and without special health care needs, in order to provide a comparison on all study measures for children without special needs. State-by-state estimates were not required for the referent sample; instead, a target of 6,000 completed interviews was set for the nation as a whole. Therefore, the target number of referent sample completed interviews within each estimation area was determined by allocating the 6,000 interviews to each estimation area across the nation in proportion to the total projected number of households with children in the estimation area. For the first sample draw, the number of telephone numbers needed to achieve the allocated number of completed interviews in each estimation area was calculated by using an expected working residential number rate, eligibility rate, screener completion rate, and interview completion rate. These rates were continually updated for subsequent sample draws based on the rates that were actually observed.

Drawing the Samples

After the number of telephone numbers necessary to achieve the target number of completed interviews for the main and referent samples in each estimation area had been estimated, the samples were drawn. The sample draw proceeded in three steps. First, telephone numbers were sampled in each estimation area as previously described. Next, some of these telephone numbers in each estimation area were flagged as belonging to the referent sample, and some were flagged as belonging to the main sample. Finally, any remaining telephone numbers that were not flagged for either the main or referent samples were left for the sole use of the NIS. Thus, after these three steps, every telephone number sampled for the NIS fell into one of three categories: 1) NIS and referent sample, 2) NIS and main sample, or 3) NIS-only sample.

In fourteen states (Alaska, Arkansas, Colorado, Delaware, Hawaii, Idaho, Iowa, Louisiana, Minnesota, Mississippi, North Carolina, Nevada, Oregon, and Utah), there was insufficient NIS sample available to obtain the desired number of main sample completed interviews. Therefore, additional telephone numbers were drawn in the manner previously described. Table B shows by state the proportion of the main sample that was augmented for each state. That is, for each state in table B, the proportion listed is the proportion of main sample telephone numbers that were called only for the National Survey of CSHCN.

Conducting the Interviews

For both the main and referent samples, each selected telephone number was called and screened for residential status and the presence of NIS age-eligible children. (The exception to this rule was the augmented portion of the main sample, which was selected solely for the National Survey of CSHCN and not the NIS. These households were not screened for NIS age-eligible children.) NIS interviews were conducted if NIS age-eligible children lived in the household. If NIS age-eligible children did not live in the household, interviewers asked if there were any children under age 18 living in the household. It is here that the selection methods for the main and referent samples diverged.

For the main sample, regardless of whether an NIS interview was conducted, the sex and date of birth were collected for each child. (If this information had been collected during the NIS interview, the questions were not asked again. Also, a questionnaire revision in late 2005 eliminated the date of birth question and replaced it with a simpler question asking each child's age.) The respondent was then asked the CSHCN Screener questions to determine the special health care needs status of every child in the household. If any children in the household were identified as having special health care needs, one was randomly selected (i.e., sampled) to be the subject of a detailed interview. If no children in the household were determined to have special health care needs, the interview concluded with a few additional demographic questions.

For the referent sample, regardless of whether an NIS interview was conducted, one child was immediately selected at random to be the subject of the interview. The sex and date of birth (or age) of the child were collected and the CSHCN Screener questions were administered. These questions were not asked about any other children in the household. Whether or not this child was identified as having special health care needs, the full National Survey of CSHCN interview was conducted about that child.

Questionnaire

The framework for the 2001 National Survey of CSHCN was initially discussed in August 1999. A panel consisting of selected State and Federal Title V Program directors, representatives from Family Voices and the Association for Maternal and Child Health Programs, health services researchers, and survey design experts identified the content domains of greatest epidemiological and policy importance. A subset of this panel then assembled questions to capture these domains. Upon approval by MCHB, these questions were pretested in 2000 and fielded in 2001 as the National Survey of CSHCN.

The 2001 questionnaire underwent revisions prior to implementation in 2005. The health insurance control sample and Low-Income Uninsured Supplement that were fielded in 2001 were not included in 2005. For the 2005-06 survey, the referent sample, Hurricane section, and the Influenza Vaccination module were added. Substantial changes were made to sections on health and functional status, care coordination, transition to adult care providers, and ease of service use. New questions were added on family structure, language spoken in the household, unmet need for interpreters, and number of specialty doctors seen in the past 12 months.

Revisions to the questionnaire were initially proposed by National Survey of CSHCN data users in February 2004, in response to a request for input distributed by e-mail to members of the SLAITS listserv and an announcement at the 2004 annual meeting of the Association for Maternal and Child Health Programs. Beginning in March 2004, a technical expert panel reviewed each suggested revision, assembled questions to address newly proposed content areas, and provided recommendations to MCHB. (See table C for a list of panel members.) New and significantly revised questions were pretested in Fall 2004, and the questionnaire was finalized by MCHB shortly thereafter.

Content

The 2005-06 National Survey of CSHCN interview immediately followed a completed NIS interview in households with an NIS-eligible child or the NIS screener in households without NIS-eligible children. The questionnaire was divided into 11 sections, summarized below.

1. Age-Eligibility Screening – This section consisted of the National Survey of CSHCN introduction and the question to determine if any children under 18 years of age live in the household.

2. Special Health Care Needs Screening – In this section, all children under 18 years old in main sample households were rostered, with sex and date of birth collected for each child. In the referent sample, one child was immediately chosen after age-eligibility screening, and sex and date of birth were collected only for this child. Rostering was followed by the CSHCN Screener (9). Race and ethnicity were then collected for all children in the household in the main sample and for the sampled child in the referent sample. Additional items for both samples included the relationship of the respondent to the sampled child and the highest level of education achieved in the household.

3. Health and Functional Status – This section included questions regarding the sampled child's physical, mental, behavioral, learning, and developmental conditions and the impact of these conditions on the child's life. The selection of questions about the child's functional status was guided by the conceptual framework of the World Health Organization's International Classification of Functioning, Disability, and Health (ICF)(17). However, the National Survey of CSHCN was not designed to assign specific ICF codes to any individuals or to derive prevalence estimates for any specific ICF codes in the population.

4. Access to Care: Utilization and Unmet Needs – The questions in this section addressed the availability of medical services for the sampled child and his or her family and the degree to which services were used. Respondents were asked about the types of medical services the child required in the last year, whether they had experienced any problems accessing medical care for the sampled child, whether they had delayed medical treatment for the child, and if so, the reasons for the delay.

5. Care Coordination – In this section, respondents were asked whether referrals were needed for any services and whether anyone helped arrange or coordinate care for the sampled child. Regardless of whether assistance was received, additional questions assessed the need for assistance and satisfaction with communication between the child's doctors and other service providers.

6. Family Centered Care, Transition Issues, and Ease of Service Use – This section contained three subsections. The first subsection asked how well the child's health care provider met the family's needs in terms of spending enough time with the child, being sensitive to family values, discussing changes to expect in the future, and making the family feel like partners in the child's care. The second subsection assessed whether children aged 5 years or older were encouraged by their providers to take responsibility for their own health care needs. For children 12 years of age or older, the second subsection also addressed unmet needs for anticipatory guidance about transitioning care to providers who treat adults. The third subsection, for children of all ages, assessed other types of services the child might receive, such as those

provided by schools, child care facilities, vocational education and rehabilitation programs, and other community programs. If the household had difficulty using these services, the reasons for those difficulties were requested.

7. Health Insurance – The goal of this section was to establish whether sampled children had comprehensive health insurance coverage. Comprehensive coverage was defined as insurance that pays for both doctor visits and hospital stays. The section included questions asking whether a sampled child was covered by any of a series of common types of medical insurance. Respondents with insured children were asked about any interruptions in the insurance coverage that might have occurred in the previous 12 months. For uninsured children, information was collected on how long it had been since they last had medical coverage. The validity of the health insurance questions in the 2001 National Survey of CSHCN was discussed in another NCHS report (18).

8. Adequacy of Health Care Coverage – Respondents with an insured child were asked to rate the cost and benefits of the insurance plans in which the child was enrolled.

9. Impact on the Family – This section assessed financial and time burdens and the ways in which the families coped with them.

10. Family Composition – This section asked questions about the total number of people living in the household at the time of the interview, the relationship of any parent to the child (e.g., biological, step, foster, adoptive), and, if there was an adoptive parent in the household, the age of the child at the time of adoption and whether the child had previously been in the domestic foster care system.

11. Income and Other Demographics – In this section, respondents were asked about their total household income, government program participation, number of non-cellular telephone lines in their household, interruptions in their telephone service during the past year, and ZIP code. The annual household income was mapped to DHHS Federal Poverty Guidelines. This made it possible to categorize the household's income relative to the federal poverty level.

All households with children received the questions in sections 1, 2, 10, and 11 above. Main sample households that included CSHCN completed the special-needs interview, consisting of sections 3-9. In the referent sample, all households went through the entire interview, regardless of special needs status. The wording of some questions was modified for referent sample cases where the child did not have special health care needs. For example, "conditions" and "diagnosis" were replaced with the more general term "health." In addition, the first three questions of section 3 about the impact of the special health care need on the child were skipped if the child did not have special health care needs.

A copy of the 2005-06 questionnaire appears in appendix IV. Appendix V lists the key differences between the 2005-06 questionnaire and the 2001 questionnaire. Appendix VI lists changes made to the 2005-06 questionnaire during the data collection period. Appendix VII includes the DHHS Federal Poverty Guidelines tables used to determine household poverty status and a description of the process to assign poverty status to households. Appendix VIII contains the state-specific health insurance program names used for the health insurance questions in section 7. Appendix IX describes the Hurricane Evacuees section, which was added to the interview on January 5, 2006 as the fourth subsection in section 6.

Computer-Assisted Telephone Interviewing

The 2005-06 National Survey of CSHCN was conducted using a computer-assisted telephone interview (CATI) system. The CATI data collection method employs computer software that presents the questionnaire on computer screens to each interviewer. The computer program guides the interviewer through the questionnaire, automatically routing the interviewer to appropriate questions based on answers to previous questions. Interviewers enter survey responses directly into the computer, and the CATI program determines whether the selected response is within an allowable range, checks it for consistency against selected other data collected during the interview, and saves the responses into a survey data file. On-screen help text is available to aid interviewers in administering the CATI questionnaire. This data collection technology reduces the time required to transfer, process, and release data, and ensures accurate questionnaire flow.

The National Survey of CSHCN questionnaire was programmed as a module of the NIS, integrating the two surveys into a single interview. The CATI instrument made full use of the computer system's ability to check whether a response was within a legitimate range, to follow skip patterns, to fill state-specific information in questions as applicable (e.g., names of state Medicaid programs), and to employ pick lists for response categories. Certain household and demographic questions were identical in the NIS and National Survey of CSHCN portions of the interview. If a respondent answered these questions during the NIS interview, the system was programmed so that the questions were not repeated in the National Survey of CSHCN. Instead, answers to these questions in the NIS were copied to the data file for the National Survey of CSHCN as appropriate.

National Survey of CSHCN Stand-Alone Questionnaire

As noted earlier, the amount of sample required to reach the target number of completed special-needs interviews for the National Survey of CSHCN main sample exceeded the NIS sample available in some states. For these states, an additional "National Survey of CSHCN-only" sample was drawn. Respondents in the augmented portion of the main sample did not receive any questions from the NIS screener or interview. Rather, the CATI system was programmed to begin with the National Survey of CSHCN introduction. Cases then proceeded through the interview in the same manner as the main sample.

Quality Control

Once initial programming was completed, the instrument underwent rigorous testing to ensure correct functioning of the CATI system. Additionally, a CATI Dress Rehearsal (CDR) was conducted to evaluate the functioning of the CATI system. This included a test of questionnaire logic, question wording, question order, and the saving of data, as well as a test of the call scheduler and calling rules that space call attempts at various times of the day and week. The CDR was not designed to provide information about response rates or eligibility rates. The CDR suggested improvements that could be made to CATI programming and to some questionnaire items, and these findings were incorporated into the final CATI instrument.

Interviewer Training

All interviews for the 2005-06 National Survey of CSHCN were conducted by NORC and its subcontractor. Interviewer training was conducted by NORC staff at production centers located in Chicago, IL; Downers Grove, IL; and Las Vegas, NV. The use of multiple sites ensured continuous coverage in all time zones across the US.

The interviewer training sessions (CDR and main survey) began with an introduction and project overview. Interviewers were informed about project goals, the purpose and history of the study, study sponsors, and study design. Interviewers received the definition for CSHCN and several examples of children who met the defined criteria. A review of the survey introduction was conducted with emphasis on the two sample types (main and referent) and the unique procedures for the augmented portion of the main sample (i.e., the stand-alone questionnaire). The relationship between the National Survey of CSHCN and NIS was also covered.

Several exercises in gaining cooperation were conducted throughout training to ensure interviewers were equipped to answer frequently asked questions (FAQs) and handle refusals. Part of the exercises included pronunciations and definitions of medical conditions, as well as a review of the FAQs and other job aids provided for interviewers.

Three types of mock interviews were used during training: demonstration, round robin, and duo. The demonstration interviews were led by the trainer and focused on the screening section of the questionnaire. Interviewers followed along in the CATI system. Round robin mock interviews were structured so an overview of each section of the questionnaire was provided before interviewers practiced the section in CATI. This method ensured that interviewers became acclimated to the questionnaire, navigating CATI, and gaining cooperation. For the duo mock interviews, interviewers were paired up and alternated playing the role of respondent and interviewer, using a pre-scripted guide to responses. Each mock interview was organized to highlight various sections of the screener and the questionnaire and provide different scenarios requiring alternative approaches for gaining cooperation.

At the end of training, interviewers completed a certification mock interview and written evaluation. The certification mock interview was administered by supervisors trained to use a common standard. The certification interview was approximately 45 minutes in length and standardized to ensure that all interviewers were assessed equally as to their project knowledge and ability to read the questionnaire verbatim and answer respondent questions. The written evaluation was administered to reinforce what was learned during the training sessions. It was 23 questions in length and took 25-30 minutes to complete. The evaluation covered FAQs, survey procedures, and question-specific information. Interviewers had to pass both evaluations to be certified to call National Survey of CSHCN cases. Table D notes the number of interviewers trained by location and month over the course of National Survey of CSHCN data collection.

Data Collection

Data collection for the 2005-06 National Survey of CSHCN started on April 5, 2005, and ended on February 5, 2007. Throughout the seven quarters of data collection, CSHCN screening was completed for 192,083 households with children in the main sample. These

households included a total of 364,841 children. Of these children, 56,014 were determined to have special health care needs. These children resided in 44,923 screened households. From each of these households, one child with special health care needs was randomly selected to be target of the special-needs interview. Interviews were completed for 40,465 of these sampled children and partially completed for an additional 375 sampled children. Interviews were considered partially complete if the health insurance section (Section 7) was completed. See table E for the total number of interviews completed and partially completed in each state.

During the same period of data collection, 6,038 interviews were completed in the referent sample. The referent sample interview focused on one randomly selected child from each household with children. Interviews were completed for 1,147 CSHCN and 4,891 children without special health care needs. In addition, there were 75 partially completed referent sample interviews (11 children had special health care needs, 64 did not).

Every state in the main sample started with a target of 850 completed special-needs interviews. The release of telephone numbers to interviewers in the production centers was determined by estimating the number of completed interviews that were still needed to reach the target and achieve reasonable response rates (defined as an overall response rate of at least 50% in every state).

During the sixth quarter of data collection, the targets were reduced by 100 per state to focus resources and effort on increasing overall response rates. With this reduction in sample size, resources were shifted to re-contacting nonrespondents from previous quarters and offering a monetary incentive to complete the interview. (See appendix X for more details on the incentive effort.) The effort to recontact nonrespondents was most pronounced in states with lower response rates, and this effort continued regardless of whether the reduced target of 750 completed special-needs interviews had already been achieved. As a result, the final number of completed interviews was generally higher in states with lower response rates.

One state (Alaska) narrowly failed to meet the data collection target of 750 completed special-needs interviews. Adding telephone lines at the end of the data collection period to reach the target was not recommended because biased estimates may result if some lines are called less frequently or over shorter periods of time than others. One state (New Jersey) narrowly failed to meet the response rate target.

It should be noted that the number of interviews completed is not the same as the number of interviews in the publicly released data files. Please see the sections on "Edits to Protect Confidentiality" and "Procedures for Developing Sampling Weights" later in this report for information regarding completed interviews excluded from the publicly released data files.

Advance Letter

Advance letters have been shown to decrease nonresponse by confirming study legitimacy and communicating the value of the survey (19). Every household with an available mailing address identified through reverse address services was sent an advance letter – 32.9% of the telephone numbers randomly generated and 58.0% of the telephone numbers dialed by the interviewers. Appendix XI contains the full complement of advance letters used over the course of data collection.

Because the National Survey of CSHCN typically follows the NIS, the advance letter sent to the main and referent samples was the usual NIS advance letter. It asked recipients to

participate in a voluntary study on the immunization of their children and the types of health and related services that their children need and use. The letter also explained how their telephone number was selected, who was conducting the survey, and that their household would be contacted within the next two weeks. The letter included an additional page of frequently asked questions covering topics such as confidentiality and the legitimacy of the survey. The letter provided toll-free telephone numbers for those with concerns or questions about the study and for respondents who wanted to participate immediately. Finally, the letter offered a website address for more information about the NIS.

As described earlier, the main sample was augmented with additional sample in states where NIS sample was insufficient to meet the National Survey of CSHCN main sample targets. These households were sent a similar advance letter, asking recipients to participate in a study regarding the types of health and related services that their children need and use. It did not mention anything about the NIS or immunizations, and it gave the address for the NCHS SLAITS website.

Toll-Free Telephone Numbers

Two toll-free telephone numbers were provided in the advance letter. The first number connected respondents who wished to participate immediately to NIS and National Survey of CSHCN interviewers. This was particularly beneficial to those who had genuine interest in the study but would not be available in two weeks, the time mentioned in the advance letter. During data collection, this line received 20,113 calls across both sample types, including 12,724 calls to report ineligibility for the survey. A total of 3,390 main sample respondents who called the toll-free number had age-eligible children and completed the CSHCN Screener. From 937 households identified with CSHCN, 857 special-needs interviews were completed based on respondents calling the toll-free number. In the referent sample, 155 respondents who called the toll-free number had age-eligible children, and 120 completed the referent sample interview (27 with special health care needs, 93 without).

The second toll-free telephone number connected recipients of the letter to the NCHS Research Ethics Review Board. Respondents could call this number with questions about the legitimacy of the study, concerns about confidentiality, and questions about their rights as a respondent. Both toll-free numbers were also provided in the closing script of the interview, in case respondents had questions after completion.

Selection of Respondent

In the first two quarters of data collection, the respondent who participated in the interview was the parent or guardian who lived in the household and was the most knowledgeable about the health and health care of the children in the household. In all subsequent quarters, the request was made for a knowledgeable parent or guardian (not necessarily “the most” knowledgeable) who lived in the household. If an NIS interview had been completed for an NIS age-eligible child in the household, the NIS respondent was selected to be the respondent for the National Survey of CSHCN.

The respondent was typically the mother or father of the children, but sometimes this was not the case. Table F shows the frequency of respondents by their relationship with the child who was randomly selected for the special-needs or referent sample interview. The relationship of the respondent to the children in the household was not obtained in the main sample if no CSHCN resided in the household.

A parent, guardian, or other adult 18 years of age or older was not identified in 2,493 households (2,400 in the main sample, 93 in the referent sample). No interviews were conducted in these households, even if a minor living there was the parent of a younger child.

Informed Consent

After a knowledgeable respondent came to the phone, or after the person who answered the telephone identified herself or himself as a knowledgeable parent or guardian, the respondent was informed of her or his rights as a survey participant. Verbal consent for study participation was then obtained and documented in the CATI system. The consent script informed respondents of the voluntary nature of the survey, assured them that their responses would be kept confidential, and informed them that there was no penalty for not answering questions. Respondents were also told that the interview might be recorded and monitored by a supervisor for quality purposes.

In the first two quarters of data collection, main sample respondents were given an estimate of the duration of the interview as part of the consent script. As described earlier, beginning in Quarter 4 of 2005, this estimate was moved to immediately follow the CSHCN Screener in order to provide more accurate information about the expected length of the interview depending on special needs status. The same change was made to the referent sample beginning in Quarter 1 of 2006.

The NCHS Research Ethics Review Board and the NORC Institutional Review Board approved all study procedures and modifications. The federal Office of Management and Budget (OMB) control number for this collection of information was 0920-0406.

Assurance of Confidentiality

Participation in surveys conducted by NCHS is voluntary, and all individually identifiable information collected is confidential. For the National Survey of CSHCN, assurance of confidentiality was provided to potential respondents as part of the informed consent procedures. Interviewers read the following statement to respondents:

> We are required by the Public Health Service Act to keep your answers strictly private. I can give you more information on this and other federal laws if you want. They guarantee that your answers will be used only for statistical research.

If respondents requested to hear more about the actual laws, they were read the following:

> The Public Health Service Act is Volume 42 of the U.S. Code, Section 242k. The collection of information in this survey is authorized by Section 306 of this Act. The

> confidentiality of your responses is assured by Section 308d of this Act and by the Confidential Information Protection and Statistical Efficiency Act.

Section 308d of the Public Health Service Act states that:

> No information, if an establishment or person supplying the information or described in it is identifiable, obtained in the course of activities undertaken or supported under section…306,…may be used for any purpose other than the purpose for which it was supplied unless such establishment or person has consented (as determined under regulations of the Secretary) to its use for such other purpose and in the case of information obtained in the course of health statistical or epidemiological activities under section…306, such information may not be published or released in other form if the particular establishment or person supplying the information or described in it is identifiable unless such establishment or person has consented (as determined under regulations of the Secretary) to its publication or release in other form.

Section 512b of the Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA; Pub. L. 107-347) states that:

> Data or information acquired by an agency under a pledge of confidentiality for exclusively statistical purposes shall not be disclosed by an agency in identifiable form, for any use other than an exclusively statistical purpose, except with the informed consent of the respondent.

When NCHS (including its contractors and agents) collects personally identifiable information under a pledge of confidentiality for exclusively statistical purposes, Section 308d of the Public Health Service Act and Section 512b of CIPSEA require that confidentiality be maintained without exception. Violations of CIPSEA are a class E felony, punishable by imprisonment for not more than 5 years, a fine not more than $250,000, or both. Strict procedures are used by NCHS, its data collection contractors, and other agents to prevent disclosure of confidential data in survey operations and data dissemination.

Selection of Sampled Children

In the main sample, all households with children under 18 years of age living or staying in the household were screened for the presence of children with special health care needs. If a household only had one child with special needs, that child was selected as the focus of the interview by default. In households with multiple children with special needs, one child was randomly selected to be the focus of the detailed interview. Households that had no children with special needs did not complete a detailed interview, and respondents were only asked a few household demographic questions.

In the referent sample, if children under 18 years of age were living or staying in the household, one child was immediately randomly selected from that household to be the focus of the interview. The CSHCN Screener was only administered for this child. Regardless of special

needs status, the entire National Survey of CSHCN interview was administered to these households, with minor modifications if the child did not have special needs.

Finding NIS Eligible Children in National Survey of CSHCN Rostering

The National Survey of CSHCN was designed to follow the administration of the NIS interview for NIS-eligible households. On occasion, a household would indicate that there were no NIS age-eligible children in the household, but upon rostering the children in the National Survey of CSHCN, NIS age-eligible children were identified. When this occurred, the interview returned to the NIS for completion prior to continuing with the National Survey of CSHCN interview. There were 372 such households identified during data collection, and 196 completed the NIS and then returned to the National Survey of CSHCN interview.

Interviews in Spanish

The questionnaire was translated into Spanish by an independent contractor, who worked with another translator to check the accuracy of the original translation. Spanish-speaking interviewers and supervisors at NORC reviewed the Spanish version and discussed any concerns with the contractors. Any necessary modifications were made and the translated questionnaire was programmed into the CATI system for testing and eventual production.

All households were first called by an English-speaking interviewer. If a respondent answered the phone in a language other than English, interviewers asked, "What language do you speak?" If it was determined that the respondent needed a Spanish interviewer, the case was placed in a Spanish calling queue. If the interviewer placing the initial call was a Spanish speaker and trained to administer the Spanish version of the questionnaire, the interviewer was able to toggle to the Spanish questionnaire and continue the interview with no interruption. If not, the case was flagged in the CATI system as needing a Spanish interviewer, and all subsequent calls were made by Spanish-speaking interviewers. Nevertheless, the interview may have been conducted in English if a subsequent call by a Spanish interviewer reached an English-speaking respondent.

During data collection for the main sample, 37,809 telephone numbers were placed in the Spanish calling queue. Of these, 25,925 were determined to reach households, and these households were screened for age-eligibility. (Some telephone numbers in the Spanish calling queue were determined to be businesses, whereas others remained unresolved due to hang-ups, answering machines, or lack of answer after multiple attempts by a Spanish interviewer.) Age-eligible children were identified in 14,541 households, and 11,346 households completed the CSHCN Screener. CSHCN were identified in 1,082 of these households, and special-needs interviews were completed in 944. In the referent sample, 2,207 telephone numbers were placed in the Spanish calling queue, 1,541 households were screened for age-eligibility, 842 had age-eligible children, and 572 completed the referent sample interview (42 with special health care needs, 530 without). Households placed in the Spanish queue comprised 5.9% of the screened households with children in the main sample, 2.3% of all completed special-needs interviews, and 9.4% of all referent sample completed interviews.

Interviews in Languages Other Than English or Spanish

Based on the experience of the 2001 National Survey of CSHCN, four languages were identified as the most probable languages that interviewers would encounter other than English or Spanish: Mandarin, Cantonese, Vietnamese, and Korean. Independent translators translated the questionnaire into these languages using the same procedures as were used for the Spanish questionnaire. While the Spanish questionnaire was programmed into the CATI system, given the expected low incidence of the other languages, a different procedure was followed to screen and interview households.

When a household was first identified as needing a language other than English or Spanish, the case was sent to specially trained interviewers who would determine the necessary language with a language service used by NORC, Language Line Services. Language Line Services provides a real time translation service in more than 170 languages. These households were then screened for NIS age-eligible children and if they were eligible for the NIS, the interviewer immediately conducted the NIS interview with the assistance of the Language Line interpreter. After a completed NIS interview, or if there were no NIS age-eligible children living in the household, the interviewer (with the help of the interpreter) screened the household for children under 18 years old. In the event that the household included children and spoke one of the four Asian languages, the case was assigned to the appropriate language queue to be called by a specially trained interviewer who spoke that language. Special language interviewers entered the respondent's answers into the regular English CATI system, while using a book that contained the translated questionnaire. This allowed for the data to be captured immediately in the CATI system and to be subject to all built-in logic and validation checks.

Of main sample telephone numbers, 854 were identified as needing an interview in one of the four available Asian languages. Of these, 53 were determined to be age-ineligible and 722 were determined to be age-eligible. The CSHCN Screener was completed in 456 of the age-eligible households and CSHCN were identified in 25 of them. The special-needs interview was completed in 21 of these households. In the referent sample, 27 telephone numbers were identified as needing an Asian-language interviewer. Twenty-three households were screened for age-eligibility, 22 had age-eligible children, and 11 completed the referent sample interview. None had special health care needs.

If the household included children but did not speak one of these four languages, the case was coded as "age eligible, special-needs screener incomplete" and the case was finalized. In the main sample, 1,148 households with children were finalized due to language. In the referent sample, 55 cases were finalized for the same reason.

Interview Length

The length of time to administer the interview depended on the special-needs status of the children in the household and the sample type (main or referent). Mean and median interview lengths were calculated by these two factors (see table G). These times also varied by NIS eligibility, because some demographic and household questions had already been administered as part of the NIS and were not repeated in the National Survey of CSHCN interview. Interview times shown for NIS-eligible households exclude administration time for the NIS interview itself.

Interview Breakoffs

The most common places where potential respondents broke off the interview occurred during NIS household screening, age screening, or interview. Of all telephone numbers called for the main sample, 212,170 refused to participate at least once during the NIS, before being asked to participate in the National Survey of CSHCN. For 147,264 of these telephone numbers, it was never determined whether the number reached a household with children.

Among the main sample cases, 58,702 households with children reached the National Survey of CSHCN screening interview but refused to participate at some point prior to completing the CSHCN Screener. The most common places in the interview where respondents broke off were at the informed consent script, the question asking for a knowledgeable respondent, or the rostering of children's ages. During the course of production, questionnaire changes were made in an effort to reduce the number of breakoffs at these locations. Among cases that broke off the interview after the CSHCN Screener, there was little commonality in the location where the interview was terminated.

Households that terminated the interview before completion were placed into a queue that was called by interviewers specially trained in refusal conversion strategies. These interviewers attempted to convert the incomplete interview into a completed interview. By the end of data collection for the main sample, 25,755 households with children that initially refused to participate (during either the NIS or National Survey of CSHCN) were successfully screened for special health care needs, comprising 13.4% of all completed CSHCN Screeners. In addition, 6,209 main sample special-needs interviews and 1,090 referent sample interviews were completed or partially completed with households that had refused to participate at least once (15.2% and 17.8% of all completed interviews, respectively).

Cases Pending at Close of Data Collection

Most of the cases in the main sample pending at the end of data collection were those in which the telephone number had not yet been resolved as residential or nonresidential (80.6% of pending cases and 16.5% of the initial sample of telephone lines). A smaller number of cases had been resolved as households without age eligibility being determined (2.6% of the initial sample), and an even smaller number of cases were households determined to be age-eligible but not successfully screened for special health care needs (1.2% of the initial sample). Finally, 0.1% of the initial sample were determined to be households with CSHCN but did not complete the interview. See table H and appendix XII for more information about final dispositions of cases in the main and referent samples.

Response Rates

Response rates provide one measure of the potential for nonresponse bias – that is, the possibility that the sample interviewed differs from the actual population in some meaningful way. Two weighted overall response rates were calculated for the National Survey of CSHCN. The special-needs screener response rate reflects the potential for bias in the main sample of children screened for special health care needs. The special needs interview response rate

reflects the potential for bias in the sample of CSHCN for whom the special-needs interview was completed.

These response rates were calculated in accordance with the American Association for Public Opinion Research's standards for Response Rate #4. (20) This response rate calculation recognizes that some cases of unknown eligibility (e.g., telephone lines that rang with no answer, or households in which the person answering the phone refused to say whether the household included children) were in fact eligible. In accordance with Council of American Survey Research Organizations (CASRO) guidelines, the proportion of eligible cases among those with unknown eligibility was assumed to be the same as the proportion of eligible cases among those with known eligibility.

Each of the response rates can be calculated as the product of component completion rates, which are discussed below. State-level response rates and component completion rates can be found in table J. Following the discussion of the response rates for the main sample, the response rates for the referent sample are presented.

Resolution Rate (Main Sample)

Response rates for telephone surveys are typically lower than response rates for household in-person surveys, in part because some telephone numbers ring with no indication of whether the number belongs to a household or to a business. The national resolution rate, which measures the proportion of sampled telephone numbers that could be identified as residential or non-residential, was 82.7%. When called, nearly half of the unresolved telephone numbers rang continually with no answer (45%). Most of the other unresolved numbers either reached persons or machines who "hung up" before identifying themselves (11%) or reached answering machines that provided no indication of whether the caller had reached a residence or a business (19%).

Age-Screener Completion Rate (Main Sample)

After a telephone number had been determined to belong to a household, that household was screened for NIS eligibility; that is, each household was screened for the presence of children of age 19 to 35 months. If a household was age-ineligible for the NIS, then that household was screened for the presence of children less than 18 years of age.

If a household was age-eligible for the NIS, then the household was also considered to be age-eligible for the National Survey of CSHCN, regardless of whether the interview reached the rostering portion of the National Survey of CSHCN. If the household indicated that they had no children whatsoever during either the NIS screener or the rostering portion of the National Survey of CSHCN, the household was considered to be age-ineligible for the National Survey of CSHCN.

For some households, it was never determined whether or not the household contained children under age 18; that is, some households did not complete the National Survey of CSHCN age-screener. The age-screener completion rate is defined as the proportion of identified households for which it was determined whether or not the household contains children under age 18. The national age-screener completion rate was 88.4%.

Household-Level Special-Needs Screener Completion Rate (Main Sample)

Once it had been determined that a household contained children under age 18, each of the household's children was screened for special health care needs. Due to breakoffs and refusals, not all age-eligible households were screened for special health care needs. The household-level special-needs screener completion rate is defined as the proportion of age-eligible households that completed the CSHCN Screener. The national household-level special-needs screener completion rate was 79.7%.

Child-Level Special-Needs-Screener Completion Rate (Main Sample)

The child-level special-needs screener completion rate is the proportion of children for which a respondent completed the CSHCN Screener. The national child-level special-needs screener completion rate was 79.0%.

To properly calculate this rate, the total number of children in age-eligible households was required for the denominator. However, some households with children broke off the interview before completing the NIS and did not complete enough of the NIS interview for the total number of children in the household to be determined. For these 4,392 households with children, the total number of children under 18 years of age was set to the average number of children in NIS-eligible households where the number of children was known. A proper denominator could then be calculated for the child-level special-needs screener completion rate.

Special-Needs Interview Completion Rate (Main Sample)

Once a child with special health care needs was randomly chosen from the household, an attempt was made to conduct a full interview about the selected child. Not all households containing CSHCN completed the detailed interview. The special-needs interview completion rate is defined as the proportion of households known to include CSHCN that completed the health insurance section (Section 7) of the interview. The national special-needs interview completion rate was 96.2%.

Overall Response Rates (Main Sample)

As noted previously, the special-needs interview response rate reflects the potential for bias in the sample of CSHCN for whom the special-needs interview was completed. The special-needs interview response rate is the product of the resolution rate, the age-screener completion rate, the household-level special-needs screener completion rate, and the special-needs interview completion rate. At the national level, this rate was 56.1%. This is the rate that will be most commonly reported as the overall "official" response rate for the 2005-06 National Survey of CSHCN because most analysts will be reporting information from the special-needs interview.

However, for those analysts interested only in CSHCN prevalence rates, the special-needs screener response rate reflects the potential for bias in the main sample of children

screened for special health care needs. The special-needs screener response rate is the product of the resolution rate, the age-screener completion rate, and the child-level special-needs screener completion rate. At the national level, this rate was 57.8%.

As noted previously, response rates provide one measure of the potential for nonresponse bias – that is, the possibility that the sample interviewed differs from the actual population in some meaningful way. However, even high response rates can be associated with nonresponse bias, so additional nonresponse analyses are warranted. NORC and NCHS researchers are preparing a report on nonresponse in the National Survey of CSHCN. This report will examine response using ecological information such as the demographic characteristics of households in the telephone exchange, process variables such as the directory-listed status of the telephone number and the availability of an address for an advance letter, and level-of-effort information such the number of calls required and whether the respondent had ever refused to participate. The report should be available from NCHS in 2008.

Overall Response Rate (Referent Sample)

An additional weighted response rate, the referent sample interview response rate, reflects the potential for bias in the referent sample of children for whom the interview was completed. The resolution rate was 82.8% in the referent sample. The age-screener completion rate was 88.5%. The interview completion rate was 68.7%. It should be noted that in the referent sample, the CSHCN Screener was not used as part of the survey screening process. All referent sample age-eligible households were asked to complete a full interview whether or not the randomly selected child had special health care needs. Therefore, the referent sample does not have a special-needs screening completion rate.

The referent sample interview response rate is the product of its resolution rate, age-screener completion rate, and interview completion rate. This rate was 50.3%.

Efforts to Maximize Response Rates

Advance letters, toll-free telephone numbers, refusal conversion efforts, and translated questionnaires were used to help maximize response rates. In addition, other efforts included questionnaire pretesting and updating, sample management teams, and monetary incentives.

A pretest and dress rehearsal were conducted to understand how respondents would react to personal questions and a lengthy interview, and to monitor suspicions of legitimacy and confidentiality, among other issues. After the pretest results were analyzed, specific improvements were made based on these findings. After every quarter of data collection, interviewers' and supervisors' recommendations for potential changes to the questionnaire were reviewed and implemented if necessary. These changes were generally based on analysis of questionnaire breakoff locations and other problems.

The National Survey of CSHCN targets were originally based on a specific number of completed interviews per state, but the targets were eventually revised to focus on the response rate in every state. Two integrated sample management teams – one focused on the NIS and one focused on the National Survey of CSHCN – met frequently to manage the sample in an

effective and efficient manner. The teams discussed options such as re-prioritizing cases and releasing more sample in specific states.

During data collection, it became clear that the response rates were lower than anticipated. In order to achieve the desired number of completed interviews per state and improve response rates, monetary incentives were offered to selected respondents from July 27, 2006 to January 29, 2007. More detail about this effort can be found in appendix X. Overall, incentives helped improve the unweighted main sample response rate by 3.5 percentage points and the unweighted referent sample response rate by 4.5 percentage points.

Quality Control of Interviewing

Telephone center supervisors were immediately available to interviewing staff at all times to resolve any questions or concerns about a case. Supervisors regularly observed the data collection process and monitored interviewers. Supervisory staff used remote telephone and computer-monitoring technology to evaluate whether interviewers performed according to project specifications. This formal monitoring ensured that introductory materials were properly read, item wording and sequence of the questionnaire were followed correctly, respondent questions were answered properly, and any vague responses were properly probed. Computer monitoring also allowed supervisors to determine if answers were entered accurately into the CATI system.

New supervisors attended an 8-hour training session that introduced them to the monitoring procedures. In addition, supervisors learned the basics of giving effective feedback and coaching interviewers. After this training session, each new supervisor was scheduled for one week to conduct dual-monitoring sessions with experienced staff. Each new supervisor observed live monitoring side by side with an experienced monitor, and each completed a Monitoring Evaluation Form. At the end of each session, the new supervisor and the experienced monitor compared notes, discussed proper scoring guidelines, and created a strategy to give feedback. All training procedures ensured that all supervisors were consistently monitoring interviewers using the same criteria.

Supervisory staff monitored 10% of all calls made for the National Survey of CSHCN. The CATI monitoring system automatically selected which interviewers to monitor, and gave newly trained interviewers, those with the fewest monitoring sessions, or with weakest performance reviews the highest priority for selection. Experienced interviewers were prioritized for monitoring based upon the length of time since their last monitoring session and recent monitoring scores. Each interviewer was typically monitored at least once a week; however, some interviewers were monitored more often.

Beginning in 2006, interviews were recorded (after gaining agreement from respondents). These recordings were valuable tools for trainings, and when necessary, they allowed supervisors to document specific case-related performance and provide tailored feedback to interviewers.

Data Files

From the main sample, three separate but linkable SAS (v9.0) data files were created based on the completed interviews. From the referent sample, one additional SAS data file was

created. The files reflect all data collected during the survey field period with two exceptions: 1) some variables and records were suppressed to protect the confidentiality of the respondents, and 2) interviews completed in Louisiana prior to Hurricane Katrina's landfall were excluded.

On August 29, 2005, calls to telephone numbers in Louisiana and parts of Mississippi were halted as a result of Hurricane Katrina. Calling in Louisiana did not resume until 2006. Because the number of interviews completed in Louisiana prior to August 29 was minimal (443 households, 800 children screened for special health care needs, 117 main sample interviews, 13 referent sample interviews), a decision was made to exclude these "pre-Katrina" cases from the final publicly released data files.

An additional SAS data file includes multiply imputed household poverty data. Details about the imputed poverty data are included in a separate report from NCHS that is available on the SLAITS website (http://www.cdc.gov/nchs/about/major/slaits/imputed_data.htm).

Screener File

This child-level file includes data on households that were in the main sample and completed the CSHCN Screener. The number of records per household equals the number of children under 18 years of age living in the household. In other words, there is one record for every age-eligible child residing in a household where the CSHCN Screener was completed. The screener was determined to be complete if question CSHCN5_A ("Has the child's emotional, developmental, or behavioral problem lasted or is it expected to last 12 months or longer?") had a nonmissing value for that child or had been appropriately skipped based on response to CSHCN5 ("Does the child have any kind of emotional, developmental, or behavioral problem for which he/she needs treatment or counseling?").

This file includes the answers to the CSHCN Screener as well as the child's age, sex, race, ethnicity, and state of residence. Except for the household identification number, the variables in this file are limited to those assessed at the child level. This file can be used to produce estimates of the proportion of children who have special health care needs and for most demographic characteristics of those children.

This file includes 363,183 records. Of the original 364,841 completed screener interviews, 858 interviews were suppressed to protect the confidentiality of households with large numbers of children. Sampling weights were adjusted to ensure that estimates based on the screener file were unchanged (see the section on "Edits to Protect Confidentiality" later in this report). In addition, 800 pre-Katrina interviews from Louisiana were excluded from the screener file.

Household File

This household-level file includes data on households that were in the main sample and completed the CSHCN Screener. There is one record for each household that completed the screener, regardless of whether or not the household included a child with special health care needs. This file includes all information about the household, including state of residence, household size, total number of CSHCN living in the household, household income (reported relative to the federal poverty level), and whether the household is in a metropolitan statistical

area. All variables in this file are at the household level. This file can be used to produce estimates of the proportion of households that contain at least one child with special health care needs and for characteristics of those households.

This file includes 191,640 records. Of the original 192,083 completed household interviews, 443 pre-Katrina interviews from Louisiana were excluded from this file.

CSHCN Interview File

This child-level file includes data for each child with special health care needs who was randomly selected to be the subject of the detailed special-needs interview and for whom an interview was completed or partially completed. Interviews were considered partially complete if the health insurance section (Section 7) had been completed. Not all respondents for CSHCN selected for an interview went on to complete or partially complete an interview.

This file includes all information from the detailed interview, including the relationship of the respondent to the sampled child, family composition, health and functional status, access to care, experience with care, adequacy of health insurance, and impact of the special health care need on the family. This file can be used to produce a wide range of estimates of the health of CSHCN.

This file includes 40,723 records. Of the original 40,840 completed special-needs interviews, 117 pre-Katrina interviews from Louisiana were excluded from this file.

Referent File

This child-level file includes one record for each referent sample interview completed for children without special health care needs. As noted previously, referent sample interviews were conducted irrespective of the sampled child's special-needs status. However, data for CSHCN from the referent sample serve a methodological purpose only and have not been publicly released. The primary purpose of the referent sample was to produce national and regional estimates on all study measures for children without special health care needs. Therefore, the referent file is limited to records for children without special health care needs only.

This file includes 4,945 records. Of the original 6,113 completed referent sample interviews, 1,158 interviews about CSHCN and 10 pre-Katrina interviews about children without special health care needs were excluded from this file. Each record contains all screening and interview data for the sampled child and the household in which the child resides.

Linking Files

The three data files from the main sample are linkable. Every screened child's household has a corresponding record in the Household File, regardless of whether a detailed interview was completed. Each interviewed child's household has a corresponding record in the Household File, and each interviewed CSHCN has a corresponding record in the Screener File. At the household level, the files can be linked using IDNUMR, a unique household identification number. All files contain the IDNUMR variable. At the child level, these files can be linked

using IDNUMXR, a unique child identification number. The Screener File and the CSHCN Interview File contain the IDNUMXR variable.

The referent file is not linkable with the data files from the main sample. The referent sample was independent from the main sample, and the two samples should not be combined or linked. Due to different screening approaches for households with multiple children (and perhaps due to other methodological differences and response propensities), the prevalence of CSHCN in the referent sample was greater than the prevalence of CSHCN in the main sample. Therefore, the size of the CSHCN population (as estimated from the main sample) and the size of the population of children without special health care needs (as estimated from the referent sample) do not sum to the total size of the noninstitutionalized population of children. Without additional statistical adjustments, estimates based on a combined file do not generalize to a defined population.

Analysts interested in making comparisons between CSHCN and children without special health care needs are encouraged to generate separate estimates from the main sample and the referent sample, and then judge the significance of differences using appropriate techniques for independent samples (24). Attempts to generate a single estimate for all children irrespective of special-needs status are discouraged; however, researchers who are interested in such estimates and are aware of the limitations may contact NCHS (slaits@cdc.gov) to receive a data file that includes referent sample interviews and sampling weights for CSHCN.

Editing

As discussed previously, the CATI system was designed to perform edits as an interviewer entered data into the computer system. If an interviewer entered something out of range, a warning screening would appear, instructing the interviewer that the data would not be accepted and that he or she would have to enter a different answer (and possibly re-ask the question). As a result, the CATI system helped to correct respondent error during the interview (for example, a respondent saying two children lived in the household, but providing only one child's age) and to identify and correct data-entry error by interviewers (for example, a child is reported to have seen a doctor 4 times in the past year, but the interviewer attempts to enter 44 times). To the extent possible without making the CATI system overly complicated, out-of-range and inconsistent responses resulted in a warning screen for the benefit of the interviewer, who was trained to correct errors as they occurred. These messages were designed primarily to prevent data entry errors and respondent errors and not to challenge respondents who gave logically inconsistent responses. Logically inconsistent responses given by the respondent were left inconsistent.

Even with many built-in CATI checks, data cleaning was still necessary. The first step in the data cleaning process was verification of the valid number of cases in the data file. After verifying the number of cases, initial data frequencies were produced and reviewed. Each variable's range of permissible values was examined for any additional invalid values or unusual distributions. Invalid values, where they occurred, were deleted. If blank values already existed for a variable, they were checked to see whether they were allowable (e.g., due to legitimate skip patterns in the questionnaire) or could be easily corrected based on related questions. Records that were missing responses for unknown reasons were left missing.

Missing Data

Missing data are often ignored completely. However, it can be very helpful to know why data are missing. The SAS data files for the National Survey of CSHCN include special missing value codes for analysts who may wish to differentiate between different types of missing values. The following key provides a description of the various codes that were used to represent missing data in the file.

(.B) Breakoff after screener—Variable is missing because the case broke off after completing the CSHCN Screener. If the CSHCN Screener was completed for the household and a child with special health care needs was selected for the interview, but a detailed special-needs interview was not completed, the record will be missing some household demographic data that are gathered only at the end of the interview.

(.L) Legitimate skip—Variable is missing due to valid questionnaire paths based on a previous answer to a root question.

(.M) Missing in error—Variable is missing due to interviewer or system errors. In cases of interviewer error, the interviewer may have deleted the data by accident or simply may not have entered the response. In cases of system error, the data may not have been collected or saved properly after it was entered by the interviewer in the CATI system.

(.P) Partially completed interview—Variable is missing because the respondent ended the interview after completing Section 7 but before completing the full interview.

Because SAS treats all of the above codes similarly in statistical analyses (i.e., as missing data), analysts using SAS who are not interested in the reasons for the missing data may continue to analyze data as usual.

It is important to note that derived variables (i.e., variables whose response was not directly provided by the respondent) do not include the detailed coding of missing data. All missing values for derived variables received a ".M" code regardless of the reason for the missing data. Similarly, ".M" was used when derived variables were suppressed to protect the confidentiality of the survey participants.

Data missing because the respondent did not know the answer or refused to provide the answer have been treated differently. Rather than assigning a missing value to these records, a numeric code was used to identify these responses. Typically, unknown answers are coded as "6," "96," or "996." Refused responses are coded as "7," "97," or "997." However, the codes may be different for specific variables; therefore, analysts are encouraged to consult the data documentation and frequency lists to identify the correct codes for each variable. Failure to do so may result in inappropriate calculations, especially for variables measured using ordinal, interval, or ratio scales.

Coding of Verbatim Answers into Question Responses

For some questions, respondents provided a response that did not match any pre-existing category. If this occurred, the interviewer chose "other" and typed in the exact response provided by the respondent. At the end of the data collection period, an attempt was made to recode the verbatim responses into existing response categories where appropriate. When

necessary, new response categories were added to the data file to capture the verbatim responses. However, when a verbatim response was unique (i.e., did not match any existing response category or other verbatim response), the response remained coded as "other."

- Responses to S3Q15A were recoded into S3Q15AR. Ten categories were created.
- Responses to C4Q0C were recoded into C4Q0BR. One new category (telephone hotline or nurse advice line) was created. Family members and friends were coded as "friend/relative" unless the person was identified as a health care provider (e.g., "Uncle Larry, who is a doctor"). "Church" was also coded as "friend/relative." "Hospital" was coded as "hospital outpatient department" unless the response specifically included "emergency room."
- Responses to C4Q02_01 were recoded into C4Q02R.
- Responses to C4Q02B_01 were recoded into C4Q02BR01-C4Q02BR07.
- Responses to C4Q0501OE were recoded into C40501BR01-C40501BR19. C40501BR17, C40501BR18, and C40501BR19 were created to capture common verbatim responses.
- Responses to C4Q0502OE were recoded into C40502BR01-C40502BR16.
- Responses to C4Q05031OE were recoded into C405031BR01-C405031BR20. C405031BR17, C405031BR18, C405031BR19, and C405031BR20 were created to capture common verbatim responses.
- Responses to C4Q05032OE were recoded into C405032BR01-C405032BR16.
- Responses to C4Q0504OE were recoded into C40504BR01-C40504BR16.
- Responses to C4Q0505OE were recoded into C40505BR01-C40505BR19. C40505BR17, C40505BR18, and C40505BR19 were created to capture common verbatim responses.
- Responses to C4Q0506OE were recoded into C40506BR01-C40506BR16.
- Responses to C4Q0507OE were recoded into C40507BR01-C40507BR16.
- Responses to C4Q0601OE were recoded into C40601BR01-C40601BR20. C40601BR17, C40601BR18, C40601BR19, and C40601BR20 were created to capture common verbatim responses.
- Responses to C4Q0602OE were recoded into C40602BR01-C40602BR16.
- Responses to C4Q0603OE were recoded into C40603BR01-C40603BR16.
- Responses to C5Q14_XOE were recoded into C5Q14R01-C5Q14R16. C4Q14R11, C4Q14R12, C4Q14R13, C4Q14R14, C4Q14R15, and C4Q14R16 were created to capture common verbatim responses.
- Responses to C5Q16_XOE were recoded into C5Q16R01-C5Q16R10.
- Responses to C7Q15A were recoded into C7Q15R01-C7Q15R10.

Edits to Protect Confidentiality

NCHS takes extraordinary measures to assure that the identity of survey subjects cannot be disclosed. The risk of inadvertent disclosure of confidential information regarding individual respondents is higher with a publicly released data set having detailed geography variables, a detailed and extensive set of survey observations, and a sizeable proportion of the total

population of interest. Coarsening a data set by suppressing survey variables, collapsing multiple variables into one, collapsing response categories for other variables, and/or introducing noise in the data are common techniques to reduce the risk of inadvertent disclosure.

In these data files, household income has been suppressed, but a measure of income relative to the federal poverty level has been included. The date of the interview and the child's age (in months) have been suppressed, but the child's age (in years) has been reported. The relationship of the respondent to the child has been suppressed when the respondent was not the parent of the child.

Geography

Geographic information that would identify the specific estimation area in states with multiple estimation areas has been suppressed. However, state identifiers are included in all main sample files. State identifiers have been suppressed for the referent file, and have been replaced with a four-category variable representing U.S. Census Bureau regions.

In addition, an indicator identifying whether or not the household is inside or outside of a Metropolitan Statistical Area (MSA) has been included for some states. This indicator, called MSASTATR, was suppressed whenever the sum total population for all MSA areas in a given state was less than 500,000 persons, or whenever the sum total population for all the non-MSA areas in a given state was less than 500,000 persons. This resulted in the suppression of the MSA identifier in 16 states. The MSA identifier was suppressed in Connecticut, Delaware, Hawaii, Massachusetts, Maryland, New Hampshire, Nevada, and Rhode Island because fewer than 500,000 persons lived in non-metropolitan areas. The MSA identifier was suppressed in Idaho, Maine, and Montana because fewer than 500,000 persons lived in metropolitan areas. The MSA identifier was suppressed in Alaska, North Dakota, South Dakota, Vermont, and Wyoming because the non-MSA population size and the MSA population size were both below the 500,000 threshold.

Race

Question CW10Q02 (in Section 2) asked about the sampled child's race. Respondents were permitted to identify all possible categories that described the child's race. If a race other than one of the seven existing categories was indicated, then a verbatim response was captured. Verbatim responses were reviewed and matched against a database of alternative race terminology maintained by the U.S. Census Bureau. Where possible, "other" race responses were backcoded into one of the seven existing categories. Once all possible verbatim responses were backcoded, a new race variable was created by collapsing the seven categories into one of six categories: white, black/African-American, American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, and multiple race. "Multiple race" was reserved for those cases where more than one of the other five categories applied.

To protect the confidentiality of individual respondents and children, responses for the race variable were further collapsed to four categories: white only, African-American or black only, other race, and multiple race. This "other race" category generally includes children for whom only one of the other three categories (Asian, Native American/Alaska Native, and Native

Hawaiian/Pacific Islander) was reported. The "other race" category also includes cases where the verbatim response could not be conclusively backcoded (e.g., American, Indian, Jewish) and no other race was reported. Children for whom more than one race was identified (e.g., Asian and Native Hawaiian) were included in the "multiple race" category. If the respondent did not know or refused to provide the race, then race was coded as ".M." This new derived race variable (called RACER) is the only classification available for all 50 states and DC.

In several states, however, minority group populations are sufficiently large that the release of additional race categories was possible while still protecting the confidentiality of the respondents and children. To identify these states, data from the 2005 American Community Survey (ACS) were examined to identify minority groups that comprise at least 5% of the total population of children in a specific state. Based on this criterion, the data files identify American Indian and Alaskan Native children in Alaska, Arizona, Montana, New Mexico, North Dakota, Oklahoma, and South Dakota. This race classification variable is called RACEAIAN. Asian children's race is reported for children in California, Massachusetts, Minnesota, Nevada, New Jersey, New York, Virginia, and Washington. This race classification variable is called RACEASIA. The data files identify both Asian children and Native Hawaiian and Pacific Islander children in Hawaii. This race classification variable is called RACE_HI.

Language

Question C2Q05 (in Section 2) collected data on the primary language spoken in the household. To protect confidentiality, Spanish-language households cannot be distinguished from other non-English-language households in the data file. Of the 15,886 main sample households with a non-English language as the primary language (C2Q05R), 75.3% (n = 11,965) lived in Spanish-language households. Because Spanish-language households are not identified in the data file, language of non-English interviews has also been suppressed.

Family Structure

To protect the confidentiality of individual children whose families have unique structural characteristics, a single measure of family structure (FAMSTRUCT) was created from C2Q04, S10Q00, S10Q01, and S10Q02. The family structure variable refers to parents living in the household. This variable has four levels: 1) two-parent household which includes both a biological or adoptive mother and a biological or adoptive father; 2) two-parent household with both a mother and a father that includes at least one step-parent; 3) one-parent household with a biological, step, foster, or adoptive mother and no father of any type present; 4) all other family structures. Any of these four family structures may include other people who act as parents, such as grandparents, aunts, uncles, or unmarried partners of the parents. Legal guardians were not considered to be mothers or fathers.

Households identified as having two mothers of the same type (biological, step, foster, or adoptive) have been classified as "other family structure." Other households with ambiguous structure (e.g., where a father refused to indicate whether he was the biological father) were also coded as "other family structure."

Number of Children in Household

The CSHCN Screener data and demographic information were collected for every child in every household with children. However, the information on the total number of children in each household significantly increases the risk of inadvertent disclosure of confidential information in households with large numbers of children. Therefore, the number of children reported to be living in a household was top-coded to suppress the identity of large households, with the specific top code determined by state. To determine the top code for a particular state, weighted data from the 2005 ACS were used to estimate the proportion of households with children in each state that include six or more children. If at least ½ of 1% of the population of households with children included six or more children, then a top code of six children was used for that state. Otherwise, a top code of five children was used. (In all states, at least ½ of 1% of the population of households with children included five or more children.) This resulted in 16 states with a top code of five children. To complete the masking of households with a large number of children, records in the Screener File were suppressed at random from these large households until the apparent number of children in these large households was 5 or 6 (depending on the necessary top code for the state). Only children who were not the subject of a detailed special-needs interview were eligible for suppression.

From the 364,841 records in the original Screener File, 858 records (0.2%) were suppressed. Sampling weights for the remaining records in the Screener File were adjusted to ensure that estimates for the prevalence of CSHCN in each state, and for the prevalence of CSHCN from large households in each state, were unchanged. Weights for the suppressed records in each state were summed based on the child's special needs classification (i.e., with or without special needs) and then redistributed by special needs status to the screening records that remained for the households with large numbers of children in that state. That is, weights for suppressed CSHCN from large households were reallocated to remaining CSHCN from large households, and weights for suppressed non-CSHCN from large households were reallocated to remaining non-CSHCN from large households. This reallocation of weights was accomplished using a ratio adjustment for the weights of the remaining records, with the exception that weights for children who were the subjects of a detailed CSHCN interview were left unchanged.

Age

In these data files, both the child's date of birth and the date of the interview have been suppressed, but the child's age (in years) at the time of the interview has been reported. A risk of inadvertent disclosure exists in households with multiple children of the same age (e.g., triplets, quadruplets) and in households with multiple sets of children of the same age (e.g., two sets of twins). Randomly adding a year of age to or subtracting a year of age from randomly selected children in selected households masked these records. Of the 191,640 households in the Household File, the ages of children in 262 households were adjusted.

Other Edits to Protect Confidentiality

Several other frequency variables have been top-coded to suppress outliers at the high end of the distribution of responses. Due to their unusual characteristics, records including these outliers might have been more readily identifiable.

- For number of doctor visits for any reason in the past year for CSHCN (C6Q01R), 21 visits or more is the maximum reported and responses between 11 visits and 20 visits have been collapsed into two categories (11-15, 16-20).
- For number of days missed from school due to illness or injury (C3Q14R), 21 days or more is the maximum reported and responses between 11 days and 20 days have been collapsed into two categories (11-15, 16-20).
- For number of visits to the emergency room in the past year (C6Q00R), 14 visits or more is the maximum reported.
- For number of specialty doctors visited with the past year (C4Q05X02AAR), 10 specialists or more is the maximum reported.
- For hours per week providing health care at home for the child (C9Q03R), 21 hours or more is the maximum reported and responses between 11 hours and 20 hours have been collapsed into a single category.
- For hours per week arranging or coordinating care for the child (C9Q04R), 21 hours or more is the maximum reported and responses between 11 hours and 20 hours have been collapsed into a single category.
- For the total number of adults living in the households (TOTADULTR), 4 adults or more is the maximum reported.
- For the education level of the household member with the highest degree (EDUCR), post-high school study is the maximum reported and other responses have been collapsed into two additional categories (less than high school graduate, high school graduate or GED completed).

Data Perturbations

Despite the modifications detailed above, there was lingering concern that the dataset might include children with unique combinations of identifiable characteristics. To address these concerns, the following characteristics in the data files were changed:

- For 4,067 CSHCN with specific combinations of health conditions (based on questions in Section 3), randomly selected children living in the same household were moved to other households within the same state. This was accomplished by changing their household identifier (IDNUMR) in the Screener File.
- For 127 children living with an unusually large number of adults, the number of adults living in the household (TOTADULTR) was reduced by one.
- For 16 children with unusual combinations of race and household size, one year was randomly added or subtracted from the children's age.

Analysts interested in working with data that were suppressed to protect confidentiality may apply to access unmodified data files through the NCHS Research Data Center (RDC). This facility, designed for the researcher outside of NCHS, is located in Hyattsville, Maryland. For more information about how to apply for access, analysts may visit the website at http://www.cdc.gov/nchs/r&d/rdc.htm.

Derived Variables on Screener File

AGE – If a child was first reported in the NIS, or reported in the first 2 calendar quarters of the National Survey of CSHCN, the respondent was asked for the child's date of birth. AGE is calculated based on the date of birth reported in either interview and on the day the child was determined to be eligible for the survey (which may have been prior to the date that the actual interview was completed). Beginning in Quarter 4, 2005, if the household first reported the child in the National Survey of CSHCN survey, they were asked to report only the child's age. If the child was determined to be only a year old, the respondent was asked for the child's age in months, but this response has been suppressed in the publicly released data files. Valid values for AGE are 0 through 17, where "0" means younger than 1 year. For 11 children, a valid age in years could not be calculated; the respondent did not know or refused to specify the child's date or birth or age. These cases are coded as missing (.M).

HISPANIC – This indicator of whether the sampled child is of Hispanic or Latino origin was derived using data collected in variables CW10Q01 and CW10Q02A. Respondents who did not identify a Hispanic ethnicity during administration of CW10Q01, but did provide an answer indicating Hispanic ethnicity as part of a verbatim response to the race question were coded with a value of "1" for the variable HISPANIC.

INTVIEW – This is an indicator of whether or not a full or partial interview (through Section 7) was completed for the child.

NEEDTYPE – This variable is based on CSHCN1 – CSHCN5 (including follow-up questions) and indicates whether or not the child has special health care needs.

RACER, RACENAAN, RACEASIA, and RACE_HI – These race classification variables were derived from data collected in variables C1002X01 through C1002X08.

SEX - This indicator was created from C2Q03.

Derived Variables on Household File

HHSTATUS—This variable indicates whether a detailed interview was completed for any children living in the household.

MSASTATR—This indicator identifying whether or not the household resides inside or outside of an MSA was suppressed to protect confidentiality in 16 states.

NM_NSPR—This variable represents the total number of children in the household without a special health care need. As noted previously, some screener records have been suppressed to protect the confidentiality of large households. This variable is based on the screener records that remain, and therefore may be inaccurate for large households.

NM_NSPFR—This variable represents the total number of female children in the household without a special health care need. As noted for NM_NSPR, this variable also may be inaccurate for large households.

NM_NSPMR—This variable represents the total number of male children in the household without a special health care need. As noted for NM_NSPR, this variable also may be inaccurate for large households.

NM_SPR—This variable represents the total number of children in the household with a special health care need. As noted for NM_NSPR, this variable also may be inaccurate for large households.

NM_SPFR—This variable represents the total number of female children in the household with a special health care need. As noted for NM_NSPR, this variable also may be inaccurate for large households.

NM_SPMR—This variable represents the total number of male children in the household with a special health care need. As noted for NM_NSPR, this variable also may be inaccurate for large households.

OTH_LANG – This variable is based on LANG1 and indicates whether or not the interview was conducted in a language other than English.

POVLEVEL—This indicator was created using total household members (C11Q01_A) and the household income value. If data for either of these two components were missing, refused, or had a "don't know" response, this measure was assigned a missing value code. The household income value was the actual dollar amount reported by respondents who reported an exact household income (C11Q01). However, when respondents did not supply a specific dollar amount for household income, it was necessary to go through a series (i.e., cascade) of questions asking respondents whether the household income was below, exactly at, or above threshold amounts (W9Q02 through W9Q12A). If respondents did not complete the income cascade, either because they refused or did not know the answer to one of the cascade questions, this measure was assigned a missing value code. Once an income-to-household-size measure was computed, it was compared with DHHS Federal Poverty Guidelines. More detail about the development of this poverty indicator is available in appendix VII. Missing values for this poverty indicator were multiply imputed. Details about the development of the imputed values are included in a separate report from NCHS that is available on the SLAITS website (http://www.cdc.gov/nchs/about/major/slaits/imputed_data.htm).

TOTADULTR—The total number of adults in the household was derived by subtracting the total number of children in the household from the total number of persons in the household (C11Q01_A).

TOTKIDSR—This variable represents the total number of children aged 0 to 17 years in the household. As noted for NM_NSPR, this variable also may be inaccurate for large households.

TOTKIDFR—This variable represents the total number of female children aged 0 to 17 years in the household. As noted for NM_NSPR, this variable also may be inaccurate for large households.

TOTKIDMR—This variable represents the total number of male children aged 0 to 17 years in the household. As noted for NM_NSPR, this variable also may be inaccurate for large households.

Derived Variables on CSHCN Interview File

Because the child's type of health insurance coverage could be reported several ways within the health insurance section of the questionnaire, a categorical indicator (TYPEINS) has been derived to simplify analyses of coverage type. Because lack of health care coverage could be reported several ways, categorical indicators have also been derived to simplify analyses of uninsurance at the time of the survey, uninsurance during the year prior to the survey, and the length of the uninsurance spell (for currently uninsured children).

MS_UNINS—This variable, which indicates the number of months without coverage during the 12 months prior to the survey, was derived from C7Q11, C7Q12, C7Q13, and C7Q14. This variable was not ascertained if the respondent reported an insurance type that was not considered comprehensive insurance (e.g., by reporting Indian Health Service coverage at C7Q10_07, by reporting a single service plan at C7Q10_09, by reporting non-comprehensive private insurance at C7Q10A, by reporting a plan type at C7Q08 or C7Q10C that could not be classified as comprehensive). If a child was uninsured for less than one month, MS_UNINS was set to 1 month. If a child was less than 12 months of age and was uninsured for his or her entire lifetime, MS_UNINS was set to 12 months.

RELATIONR – This variable is based on C2Q04 and describes the relationship of the respondent to the child selected for the interview.

TYPEINS—This variable, which is a categorical indicator of health insurance coverage type, was derived from the question in Section 7. Private coverage could be reported directly (C7Q03A or C7Q08B) or by responding "yes" to both C7Q10X08 and C7Q10B. To be included, the reported private insurance was required to cover both doctor visits and hospital stays. Military health care was considered to be comprehensive private coverage. Military health care coverage could be reported directly (C7Q05) or by responding "yes" to both C7Q10X06 and C7Q10B. Public health insurance includes Medicaid, SCHIP, Medicare, and Medigap coverage. Medicaid coverage includes Medicaid, SCHIP, Medicare, and Medigap coverage. Medicaid coverage could be reported directly (C7Q01) or by responding "yes" to both C7Q10X01 and C7Q10B. SCHIP coverage could be reported directly (C7Q02) or by responding "yes" to both C7Q10X04 and C7Q10B. Medicare and Medigap could be reported by responding "yes" to either C7Q10X02 or C7Q10X05, as well as C7Q10B. Public health insurance could also be reported directly at C7Q04, which is a single question about both Medicaid and SCHIP coverage. (See appendix VIII.) Indian Health Service coverage (C7Q10X07) was not considered to be public or comprehensive health insurance.

UNINS_YR—This variable indicates that the child was uninsured at the time of the survey or at some time during the 12 months prior to the survey.

UNINS—This variable indicates that the child was uninsured at the time of the survey. A positive value for this variable indicates that the respondent did not report any insurance coverage; reported coverage, but indicated that it was not comprehensive; or reported only Indian Health Service coverage or single type/place insurance. A negative value for this variable indicates that the respondent did report comprehensive insurance coverage.

YS_UNINS—This variable, which indicated the number of years since an uninsured child was last insured, was derived from C7Q13. This variable was not ascertained if MS_UNINS was not ascertained, and this variable is missing for children who are currently insured and for children who have been uninsured for less than 12 months. There is one

exception. If a child was less than 12 months of age and was uninsured for his or her entire lifetime, YS_UNINS was set to "never insured."

Derived Variables on Referent File

Nearly all derived variables appearing on the Screener File and Interview File also appear on the Referent File. These variables are described above.

Dummy Variables

When respondents were permitted to provide multiple answers for the same question, a variable was created for each possible answer. The values for these new dummy variables are "yes, this answer was given" and "no, this answer was not given." When respondents could not or did not provide an answer to the question, a value of "don't know" or "refused" was reported for each of the dummy variables.

- CW10Q02 is represented by CW10Q02_01 to CW10Q02_08.
- C4Q05X01B is represented by C40501BX01 to C40501BX16.
- C4Q05X02B is represented by C40502BX01 to C40502BX16.
- C4Q05X031B is represented by C405031BX01 to C405031BX16.
- C4Q05X032B is represented by C405032BX01 to C405032BX16.
- C4Q05X04B is represented by C40504BX01 to C40504BX16.
- C4Q05X05B is represented by C40505BX01 to C40505BX16.
- C4Q05X06B is represented by C40506BX01 to C40506BX16.
- C4Q05X07B is represented by C40507BX01 to C40507BX16.
- C4Q06X01B is represented by C40601BX01 to C40601BX16.
- C4Q06X02B is represented by C40602BX01 to C40602BX16.
- C4Q06X03B is represented by C40603BX01 to C40603BX16.
- C5Q14 is represented by C5Q14X01 to C5Q14X10.
- C5Q16 is represented by C5Q16X01 to C5Q16X10.
- C7Q10 is represented by C7Q10X01 to C7Q10X10.
- C7Q15 is represented by C7Q15X01 to C7Q15X10.
- S10Q02 is represented by S10Q02X01 to S10Q02X19.

Additional Data Notes

The questions on care coordination and doctor communication (C5Q12—C5Q06) were asked for children who used two or more types of services during the prior 12 months. Due to a CATI program error, "any other health-related medical, educational, or social services" (C5Q01) was not included as a service type when determining whether or not a child had used two or more types of services. As a result, 72 CSHCN in the main sample and 27 children in the

referent sample have missing values for the care coordination and doctor communication questions.

Based on interviewers' responses to a question about the languages used to complete the interview, children in 29 households may have erroneously been screened for special health care needs in a language other than the 6 languages supported by this survey. Only one of these households included CSHCN. These completed screening interviews remain on the publicly released data files, and they are included among the cases identified as being completed in a language other than English (OTH_LANG).

Procedures for Developing Sampling Weights

This section provides a non-technical overview of the weighting procedures for the main sample. A more detailed and technical description can be found in appendix II. The procedures used to develop the weights for the referent sample were very similar to those for the main sample. Details of the referent sample weighting procedures can be found in appendix III.

As noted earlier, calls to telephone numbers in Louisiana and parts of Mississippi were halted on August 29, 2005 as a result of Hurricane Katrina. Calling in Louisiana did not resume until 2006. Because the number of interviews completed in Louisiana prior to August 29 was minimal, a decision was made to exclude these "pre-Katrina" cases from the final publicly released data files. These cases were assigned a weight of zero and were not included in any of the weighting procedures that follow.

Household Screener Weight

A household weight was generated for analysis of households that completed a screener interview. For example, analysis of the proportion of households with CSHCN would use the household screener weight. The steps to create this weight consist of the calculation of a base sampling weight, adjustments for household-level nonresponse, and an adjustment for multiple telephone lines. This weight is poststratified so that the sum of the household weights for each state matches the number of households with children as projected from Census population estimates.

Base Sampling Weights

The goal of the 2005-06 National Survey of CSHCN was to complete 750 interviews for CSHCN in each state over seven calendar quarters of data collection. The total number of telephone lines needed to obtain this number of completed interviews was estimated. Enough NIS sample was subsequently selected for most estimation areas to obtain the required number of completed cases for the National Survey of CSHCN for each quarter of data collection. Some estimation-area samples contained too few telephone numbers in the NIS sample to obtain the desired number of completed cases. In these areas, additional telephone numbers were randomly selected to reach the National Survey of CSHCN targets.

The telephone lines selected for screening for the National Survey of CSHCN represent a random sample in each geographic area of all possible telephone lines in non-cellular banks of telephone numbers containing at least one residential-listed number. The probability that any given telephone line will be selected from this population of possible telephone lines can be calculated by dividing the number of telephone lines selected for the study by the total number of possible telephone lines in a given area.

Each telephone line selected for the National Survey of CSHCN represented some larger number of telephone lines in that geographic area. This number can be calculated as the inverse of the probability of selection for any telephone line. This number is the base weight that is attached to each completed household interview in that geographic area. Base weights vary by geographic areas and slightly by quarters within a geographic area, but are the same for all telephone numbers in a given quarter within a geographic area.

First Form of Nonresponse: Unknown Household Status

When the selected telephone lines were called, three results were possible:

- It was determined that the telephone line belonged to a household.
- It was determined that the telephone line was not a working residential number but was a business number or a nonworking number.
- The status was undetermined because the telephone rang without being answered, the person answering the telephone hung up immediately, or the telephone-answering device did not indicate whether the telephone line belonged to a household.

This last category includes some household telephone lines, but the exact number of household telephone lines in this category is unknown. The completed household interviews must represent the households in this unknown category. The size of the adjustment is based on the observed size of the first two categories. The proportion of households in the unknown category is assumed to be the same as the proportion of households among all resolved telephone numbers. This adjustment varies based on socioeconomic and demographic characteristics of the geographic area and whether the telephone line was directory listed. Based on the frequency of the nonresponse in a given area, compensation is made for this nonresponse by proportionately increasing the weights for those interviews that could be completed in that area so the completed interviews represent the households in the unknown category.

Second Form of Nonresponse: Unknown Household Eligibility

When a household has been identified, three results are possible:

- It is determined that the household includes an age-eligible child and is eligible for further screening.
- It is determined that the household does not include a child and is not eligible.
- The screening interview is not completed, and the eligibility of the household is unknown.

This last category includes some age-eligible households. However, the exact number of age-eligible households in this category is unknown. The completed household interviews must represent the age-eligible households in this unknown category. This proportional adjustment is the second unit nonresponse adjustment. The size of the adjustment is based on the observed size of the first two categories. The proportion of age-eligible households in the unknown category is assumed to be the same as the proportion of age-eligible households among all households where the screening interview for the presence of children was completed. This adjustment varies based on geographic area. Based on the frequency of nonresponse to the age-eligible screening interview in a given area, compensation is made for this nonresponse by proportionately increasing the weights for those interviews that could be completed in that area, thus representing the age-eligible households in the unknown category.

Third Form of Nonresponse: Eligible Households Who Do Not Complete the Screener

When an age-eligible household has been identified, two results are possible:

- The CSHCN Screener is completed.
- The CSHCN Screener is not completed.

The completed household screeners must represent the households in the incomplete category. This proportional adjustment is the third unit nonresponse adjustment. The size of the adjustment is based on the size of the two categories and is calculated as the ratio of the total number of age-eligible households to the number of completed screener interviews. This adjustment varies by geographic area. Based on the frequency of nonresponse among age-eligible households in a given sample, this nonresponse is compensated by proportionately increasing the weights for those screeners that could be completed in that area. The completed screeners represent the age-eligible households with incomplete screeners.

Adjustment for Households with Multiple Telephone Lines

Among the households that complete the CSHCN Screener, some will report more than one non-cellular telephone line for home use (excluding lines used only for fax or computer). If a household has multiple telephone lines for home use, this household has a greater chance of being included in the survey than does a household with only a single telephone line. An adjustment to the weight is necessary to compensate for their multiple chance of selection. The weights of these households were adjusted by dividing the weight for the household by the number of telephone landlines for home use.

Poststratification of Household Weight

Despite the weighting efforts and the nonresponse adjustments, the estimated number of households with children is unlikely to perfectly match the population sampled. Any discrepancies are likely to be due to random sampling error and nonrandom response biases. The previous nonresponse adjustments used completed screener interviews to adjust for incomplete screeners and assumed that households with completed screeners were similar to households with incomplete screeners. Poststratification adjusts the weights to match population control totals for key demographic information obtained from an independent source.

For the National Survey of CSHCN, the independent source was the 2006 Current Population Survey (CPS) Annual Demographic Survey (formerly known as the March Supplement). March 2006 was the midpoint of the data collection period for the National Survey of CSHCN data file.

The following demographic subgroups were used as population control totals:

- Number of households with one, two, and three or more children
- Number of households with children in each of three nonoverlapping race/ethnicity categories
- Number of households with children that have a household income in each of five nonoverlapping categories
- Number of households with children that have a highest reported level of education within each of three nonoverlapping categories
- Number of households with children that have a landline telephone, and number that experienced an interruption in telephone service for at least 1 week during the past 12 months (including households without any telephone service during the past 12 months)

Inclusion of these demographic subgroups helped to adjust for the potential bias that may exist because the National Survey of CSHCN, as a telephone survey, could not select households without a telephone at the time of the survey. Households with interrupted telephone service were targeted in the weighting process because there is evidence that households with telephones at the time of the survey, but with interruptions in telephone service during the year, are more similar to households with no telephone service than are households with uninterrupted telephone service during the year (21-23). Therefore, noncoverage of households without a telephone can be somewhat compensated for by proportionately increasing the weights for those interviews that could be completed in households with interrupted service. In this way, completed interviews in households with interrupted service represent the incomplete interviews in households without telephone service at the time of the interview.

Truncation of Large Household Weights

Extremely large weights were truncated to prevent a small number of cases with large weights from having undue influence on the estimates. Details can be found in appendix II.

Child Screener Weight

A child screener weight was generated to analyze information available from the screener interview. For example, the proportion of CSHCN among all children nationally (or in each state) would be weighted using the child screener weight. Demographic information and information regarding special health care needs status are collected for each resident child in the main sample. The weight for screened children begins with the final household weight, but is adjusted so that the final child screener weight sums to the number of children in the nation, as estimated from the annual population estimates published by Census Bureau and the CPS. This poststratification is described below.

Poststratification of Child Screener Weight

Despite the weighting efforts and the nonresponse adjustments, the estimated number of children is unlikely to match the population sampled. Any discrepancies are likely to be due to random sampling error and nonrandom response biases, such as increased nonresponse based on age, sex, or race of the child. Poststratification adjusts the weights to match population control totals for key demographic variables obtained from an independent source.

For the child screener weight, the independent source was the estimated 2005 census population counts for noninstitutionalized children, stratified by sex, age, and race/ethnicity. The CPS Annual Demographic Survey data (averaged across 2004, 2005, and 2006) were used to produce proportions for the other demographic items of interest. The state-level child screener weights were adjusted so that the sum of the weights equals the estimated 2005 census population counts projected to March 2006 for the following groups:

- Number of male and female children in four age categories
- Number of children in each of five nonoverlapping race/ethnicity categories
- Number of children in households with one, two, and three or more children
- Number of children in households that have a household income in each of five nonoverlapping categories
- Number of children in households that have a highest level of education in each of three nonoverlapping categories

Truncation of Large Screener Weights

Extremely large weights were truncated to prevent a small number of cases with large weights from having undue influence on the estimates. Appendix II describes how the weights were truncated.

Child Interview Weight

A child interview weight was generated for analysis of information available from the interview. For example, the proportion of CSHCN with insurance or the proportion of CSHCN

with barriers to needed care would be weighted using the child interview weight. This weight begins with the poststratified, adjusted screener weight. This weight is adjusted for interview nonresponse and for the number of CSHCN in the household. The adjusted weight is poststratified so the final child interview weight sums to the number of children in the nation, as estimated from the weighted child screener file.

Adjustment for Households with Multiple CSHCN

One child with special health care needs was randomly selected from among all children with special needs in the household. In households with multiple eligible CSHCN, the randomly selected child represents all of the nonselected CSHCN in the household. Therefore, the sampling weight for this completed interview must be increased to reflect the fact that this completed interview represents multiple CSHCN in that household. This adjustment multiplies the adjusted child screener weight by the number of eligible CSHCN in the household.

Fourth Form of Nonresponse: Sampled Children for Whom an Interview Is Not Completed

When a child with special health care needs has been randomly selected (i.e., sampled), two results are possible:

- An interview is completed.
- An interview is not completed.

The completed child interviews must represent the children who were sampled but for whom an interview was not completed. This proportional adjustment is the fourth unit nonresponse adjustment. The size of the adjustment is based on the size of the two categories and is calculated simply as the ratio of the total number of sampled children to the number of completed interviews. In other words, based on the frequency of nonresponse among sampled children with certain demographic characteristics in a given area, compensation is made for this nonresponse by proportionately increasing the weights for those interviews that could be completed in that area. The completed interviews, therefore, represent the sampled children with incomplete interviews.

Poststratification of Child Interview Weight

The child interview weight is further poststratified so that the weighted number of CSHCN based on the child interview weight is the same as the weighted number of CSHCN estimated using on the child screener weight. In addition, the child interview weight is adjusted so that the demographic characteristics of CSHCN based on the child interview weight are the same as the demographic characteristics of CSHCN estimated using the child screener weight. The demographic subgroups used as population control totals were similar to the demographic subgroups used for poststratification of the child screener weight.

Truncation of Large Interview Weights

Extremely large weights were truncated to prevent a small number of cases with large weights from having undue influence on the estimates. Details can be found in appendix II.

Quality Control

Staff compared the formulas for the weights and adjustments developed by the sampling statistician with the actual weights and adjustments constructed by the statistical programmer. The variables delivered by the data collection staff to the statistical programmer were used in independent calculations of the weights to check the programmer's implementation of the statistician's weighting specifications. In addition to this independent check, univariate statistics were produced and reviewed for the adjustments and weights.

Estimation and Hypothesis Testing

The National Survey of CSHCN data were obtained through a complex sample design involving clustering of children within households and stratification of households within states. To produce estimates that are representative of children nationally and within each state, sampling weights must be used. These sampling weights account for the unequal probability of selection of each household and child, and they include adjustments for multiple-telephone households, unit nonresponse, and noncoverage of nontelephone households, as well as adjustments to known population control estimates.

As described earlier, three sampling weights have been developed for main sample interviews from the National Survey of CSHCN. These weights should be used for both national and state-level analyses of the prevalence of special health care needs and the characteristics of CSHCN. One additional sampling weight has been developed for referent sample interviews.

Household weight (WEIGHT_H)—This weight is on the Household File and is used to produce estimates that are representative of households with children nationally and within each state. A household weight has been associated with every age-eligible household screened from the main sample. This weight should be used only when the unit of analysis is the household.

Screener weight (WEIGHT_S)—This weight is on the Screener File and is used to produce estimates that are representative of children nationally and within each state. A screener weight has been associated with every child screened from the main sample, regardless of whether a detailed special-needs interview has been completed. This weight should be used only when the unit of analysis is the child, and the data analyzed come solely from the Screener File and the Household File.

Interview weight (WEIGHT_I)—This weight is on the CSHCN Interview File and is used to produce estimates that are representative of CSHCN nationally and within each state. An interview weight has been associated with all CSHCN from the main sample who have completed or partially completed interviews. This weight should be used only when the unit of analysis is the child with special health care needs and the data analyzed include variables that are on the CSHCN Interview File.

Referent Interview weight (WEIGHT_RI)—This weight is on the Referent File. When used with data from the publicly released Referent File, this weight can be used to produce estimates that are representative of children without special health care needs nationally and regionally. It should be noted that a referent interview weight was generated for all children who have completed or partially completed referent sample interviews irrespective of special-needs status. However, because the publicly released Referent File only includes data for children without special health care needs, the file includes weights only for children without special health care needs.

Interpretation of Weighted Estimates

Estimates based on the screener weights generalize only to the U.S. noninstitutionalized population of children 0-17 years of age. Estimates based on the interview weights generalize only to the U.S. noninstitutionalized population of CSHCN 0-17 years of age. These estimates do not generalize to the population of parents, the population of mothers, or the population of children's health care providers.

Two examples may help make this distinction clearer. Weighted estimates based on C6Q0D can be interpreted as the proportion of CSHCN whose parents/guardians experienced difficulties using services, but should not be interpreted as the proportion of parents who experienced difficulties using services. Similarly, weighted estimates based on C6Q0A_E can be interpreted as the proportion of CSHCN 12-17 years of age whose doctors have talked about health insurance, but should not be interpreted as the proportion of parents who have talked about health insurance with their children's doctors, nor as the proportion of doctors who have talked about health insurance with older CSHCN.

Variables Used for Variance Estimation with the Main Sample

The sample design of the National Survey of CSHCN is complex, and the household records and the child-level screener and interview records have unequal weights. Therefore, statistical software programs that assume simple random sampling will most often compute standard errors that are too low. Tests of statistical hypotheses may then suggest statistically significant differences or associations that are misleading. However, computer programs are available that provide the capability of variance estimation for complex sample designs (e.g., SUDAAN, Stata, WesVar). In order to provide the user with the capability of estimating the complex sample variances for the National Survey of CSHCN data, we have provided stratum identifiers and primary sampling unit (PSU) codes on the data files. These variables and the sample weights are necessary to properly calculate variances.

The stratum identifiers reported on the data set are not identical to the strata used to draw the main sample. In states with multiple estimation areas, independent samples were selected from each estimation area in proportion to the total number of households with children in each estimation area. Therefore, these estimation areas should be considered strata for variance estimation. However, disclosure of the specific estimation area for each child (even if the code were scrambled) could increase the risk of disclosure of a respondent's identity. For example, the estimation area with the lowest frequency of responses in New Jersey would be readily

identifiable as Newark. In the absence of estimation area-specific identifiers, data users should use the state identifier (STATE) as the stratum identifier. By using the state identifier rather than the suppressed estimation area identifier, the standard errors for national and state estimates with key variables are affected only slightly, and not in a consistent direction. The PSU for the National Survey of CSHCN is the household and is represented on the data sets by the unique household identifier, IDNUMR.

The overall number of persons in this survey is sufficient for most statistical inference purposes. However, analyses of some rare responses and analyses of subclasses can lead to estimators that are unreliable. Small sample sizes used in the variance calculations may also produce unstable estimates of the variances. Consequently, these analyses require that the user pay particular attention to the variability of estimates of means, proportions, and totals.

Variables Used for Variance Estimation with the Referent Sample

In order to provide the user with the capability of estimating the complex sample variances for the referent sample data, we have provided stratum identifiers and PSU codes on the referent data file. These variables and the sample weights are necessary to properly calculate variances. The stratum identifiers reported on the data set are not identical to the strata used to draw the referent sample. Disclosure of the specific estimation area for each child (even if the code were scrambled) could increase the risk of disclosure of a respondent's identity.

In the absence of estimation area-specific identifiers, data users should use the variable STRATUM as the stratum identifier for the referent sample. The 14 strata identified by the variable STRATUM were created by combining estimation areas into each stratum. At no point were estimation areas in one census region collapsed with estimation areas in another census region, so regional estimates will still be possible. But all strata now contain data from at least three states, which limits the risk of disclosure.

In some cases, limited reporting of strata can affect statistical inferences drawn from the data. The estimation areas were combined in a systematic fashion developed to minimize the impact on variance calculations. The standard errors for national estimates with key variables were affected only slightly and not in a consistent direction.

The PSU for the referent sample is the household and is represented on the data sets by the unique household identifier, IDNUMR.

Variance Estimation Using SUDAAN and STATA

Standard errors of estimates from the National Survey of CSHCN can be obtained using the Taylor-series-approximation method, available in software such as SUDAAN, SAS, and STATA. For the main sample, the state should be identified as the stratum variable and the household should be identified as the PSU. For the referent sample, the stratum variable is so named (STRATUM) and the household should be identified as the PSU.

The simplifying assumption that PSUs have been sampled with replacement allows most complex survey sample design computer programs to calculate Taylor-series standard errors in a straightforward way. This method requires no recoding of design variables, but is statistically less efficient (and therefore more conservative) than some other methods because the PSU unit is

treated as being sampled with replacement within the stratum unit. For SUDAAN, the data file needs to be sorted by stratum (STATE or STRATUM) and PSU (IDNUMR). The following SUDAAN design statements are then used for analyses at the household level:

```
PROC  . . .  DESIGN = WR;
NEST STATE IDNUMR;
WEIGHT WEIGHT_H;
```

For STATA, the following design statements are used:

```
svyset strata STATE
svyset psu IDNUMR
svyset pweight WEIGHT_H
svyset
```

For analyses of the Screener File data at the child level, replace "WEIGHT_H" with "WEIGHT_S". For analyses of the CSHCN Interview File data, replace "WEIGHT_H" with "WEIGHT_I". For analyses of the Referent File data, replace "WEIGHT_H" with "WEIGHT_RI" and "STATE" with "STRATUM."

Other variance estimation procedures are also applicable to the National Survey of CSHCN. Specifically, the jackknife method with replicate weights and the bootstrap resampling method with replicate weights can also be used (via software such as WesVar) to obtain standard errors that fully reflect the impact of the weighting adjustments on standard errors.

Variance Estimation for Subsets of the Main Sample Data Files

Most analyses of the National Survey of CSHCN data will focus on specific population subgroups, such as CSHCN in only one state or CSHCN living in poverty. Some analysts will therefore be tempted to delete all records outside of the domain of interest in order to work with smaller data files and run computer jobs more quickly. This procedure of keeping only select records and list-wise deleting other records is called subsetting the data. Subsetted data that are appropriately weighted can be used to generate correct point estimates (e.g., estimates of population subgroup frequencies or means), but most software packages that analyze complex survey data will incorrectly compute standard errors for subsetted data. When complex survey data are subsetted, the sample design structure is often compromised because the complete design information is not available. Subsetting the data can delete important design information needed for variance estimation (e.g., deleting all records for certain subgroups may result in entire PSUs being removed from the design structure).

The main sample of the National Survey of CSHCN was designed to provide independent data sets for each of the 50 states and the DC. Subsetting the survey data to a particular state does not compromise the design structure of the survey. That is, standard errors calculated in SUDAAN for a particular state will not be affected if the data set has been subsetted to that particular state.

However, subsetting to specific population subgroups (within or across states) can result in incorrect standard errors. For example, subsetting the data to those CSHCN who live in

poverty within a specific state will result in incorrectly calculated standard errors. Typically, the standard errors for subsetted data will be inflated, resulting in a higher probability of type-II error (i.e., failing to detect significant differences that do in fact exist). SUDAAN has a SUBPOPN option that allows the user to target specific subpopulations for analysis while retaining the full unsubsetted data set that includes the full sample design information. Analysts interested in specific population subgroups must use SUBPOPN rather than subsetting the data sets.

Variance Estimation for Subsets of the Referent Sample Data Files

As with the main sample, subsetting the referent sample to specific population subgroups can result in incorrect standard errors. For example, subsetting the data to just adolescent children without special health care needs will result in incorrectly calculated standard errors.

Some analysts may recognize, however, that the publicly released referent file is a subset of the data from the referent sample. From the referent sample, special-needs interviews were completed for one randomly selected child per household irrespective of the child's special-needs status. However, the publicly released referent file only includes data for children without special health care needs, a subset of the full sample.

When complex survey data are subsetted, the sample design structure can be compromised and important design information needed for variance estimation can be lost. However, the sample design for the referent sample is simpler than for the main sample, and subsetting these data to children without special health care needs has a minimal effect on statistical inferences drawn from the data. The standard errors for national estimates with key variables were deflated only slightly (generally less than one-thousandth of a percentage point).

Researchers requiring the full sample design structure for the referent sample may contact NCHS (slaits@cdc.gov) to receive a data file that includes referent sample interviews, sampling weights, and stratum identifiers for CSHCN.

Weighted Frequencies, Prevalence Estimates, and Standard Errors

Weighted frequencies of the number of households having a child with special health care needs and the number of CSHCN by state appear in appendix XIII. Prevalence estimates and standard errors are also provided. Analysts may wish to replicate these tables to determine if they are using the weights correctly.

Weighted frequencies, prevalence estimates, and standard errors for other survey measures will be available from the Data Resource Center for Child and Adolescent Health. This on-line center is led by the Child and Adolescent Health Measurement Initiative at the Oregon Health and Science University and is supported through a cooperative agreement with MCHB. The data resource center is accessible at http://www.cshcndata.org or http://www.childhealthdata.org.

Guidelines for Data Use

With the goal of mutual benefit, NCHS requests that recipients of data files cooperate in certain actions related to their use.

Any published material derived from the data should acknowledge NCHS as the original source. The suggested citation, "Data Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Children with Special Health Care Needs, 2005-06," should appear at the bottom of all tables. Published material derived from the data should also include a disclaimer that credits any analyses, interpretations, or conclusions reached to the author and not to NCHS, which is responsible only for the initial data. Consumers who wish to publish a technical description of the data should make a reasonable effort to ensure that the description is not inconsistent with that published by NCHS.

CIPSEA and the Public Health Service Act (Section 308d) provide that these data collected by NCHS may be used only for the purpose of health statistical reporting and analysis. Any effort to determine the identity of any reported case is prohibited by these laws. NCHS takes extraordinary measures to assure that the identity of survey subjects cannot be disclosed. All direct identifiers, as well as any characteristics that might lead to identification, have been omitted from the data set. Any intentional identification or disclosure of a person or establishment violates the assurances of confidentiality given to the providers of the information. Therefore, users must:

- Use the data in this data set for statistical reporting and analysis only.
- Make no use of the identity of any person discovered, inadvertently or otherwise, and advise the Director, NCHS, of any such discovery (301-458-4500).
- Not link this data set with individually identifiable data from any other NCHS or non-NCHS data sets.

Use of the data set signifies users' agreement to comply with the above-stated statutory-based requirements.

Further Information

Data users can obtain the latest information about SLAITS by periodically checking the SLAITS website at http://www.cdc.gov/nchs/slaits.htm. This site features downloadable data files and documentation for SLAITS modules, as well as important information about any modifications and updates to data and/or documentation. Data users will also find current contact information if you have any additional questions. Data users with questions may also send e-mail to slaits@cdc.gov.

Researchers may also wish to join the SLAITS electronic mail listserv. To subscribe or unsubscribe, visit http://www.cdc.gov/nchs/about/major/slaits/slaitslistserv.htm and follow the directions listed. The listserv has approximately 1,000 subscribers around the world who use SLAITS data or are interested in SLAITS. Subscribers periodically receive e-mail containing news about SLAITS surveys (e.g., new releases or modifications to existing data), publications, or related conferences. The listserv is moderated and listserv membership is private.

For more information on CDC, you may contact CDC's Information Contact Center (CDC-INFO) in English or Spanish by calling (800) CDC-INFO [800-232-4636] or e-mailing cdcinfo@cdc.gov. Persons with hearing impairment may contact CDC-INFO with a TTY machine at (888) 232-6348. The CDC-INFO fax machine line is (770) 488-4760. Please note, however, that CDC-INFO cannot respond to questions about individual medical cases, provide second opinions, or make specific recommendations regarding therapy. These issues should be addressed directly with personal health care providers.

References

1. van Dyck PC, McPherson M, Strickland BB, et al. The national survey of children with special health care needs. Ambulatory Pediatrics, 2:29-37, 2002.

2. Blumberg SJ, Olson L, Frankel M, et al. The design and operation of the National Survey of Children with Special Health Care Needs, 2001. National Center for Health Statistics. Vital Health Stat 1(41). 2003.

3. Blumberg SJ, Olson L, Osborn L, Harrison H. The design and operation of the National Survey of Early Childhood Health, 2000. National Center for Health Statistics. Vital Health Stat 1(40). 2002.

4. Blumberg SJ, Olson L, Frankel MR, et al. The design and operation of the National Survey of Children's Health, 2003. National Center for Health Statistics. Vital Health Stat 1(43). 2005.

5. Ireys HT, Nelson RP. New federal policy for children with special health care needs: Implications for pediatricians. Pediatrics 90:321-327. 1992.

6. McPherson M, Arango P, Fox H, et al. A new definition of children with special health care needs. Pediatrics 102:137-40. 1998.

7. Westbrook LE, Silver EJ, Stein REK. Implications of estimates of disability in children: A comparison of definitional components. Pediatrics 101:1025-1030. 1998.

8. Newacheck PW, Strickland B, Shonkoff JP, et al. An epidemiologic profile of children with special health care needs. Pediatrics 102:117-123. 1998.

9. Bethell CD, Read D, Stein RE, et al. Identifying children with special health care needs: Development and evaluation of a short screening tool. Ambulatory Pediatrics 2:38-48. 2002.

10. Stein REK, Silver EJ, Bauman LJ. Shortening the questionnaire for identifying children with chronic conditions: What is the consequence? Pediatrics 107-E61. 2001.

11. Bethell CD, Read D, Blumberg SJ, Newacheck PW. What is the prevalence of children with special health care needs? Toward an understanding of variations in findings and methods across three national surveys. Maternal and Child Health Journal (online ahead of print). DOI 10.1007/s10995-007-0220-5.

12. NORC at the University of Chicago. 2005 Methodology Report: National Immunization Survey. Chicago, IL: NORC. 2007.

13. Zell ER, Ezzati-Rice RM, Battaglia MP, Wright RA. National immunization survey: The methodology of a vaccination surveillance system. Public Health Reports 115:65-77. 2000.

14. Lepkowski, JM. Telephone Sampling Methods in the United States. In R. M. Groves et al. (eds.), Telephone Survey Methodology. New York: Wiley. pp. 73-98. 1988.

15. Tucker C, Casady RJ, and Lepkowski, JM. A Hierarchy of List-Assisted Stratified Telephone Sample Design Options. Proceedings of the Survey Research Methods Section. Alexandria, VA: American Statistical Association, pp. 982–987. 1993.

16. Blumberg SJ, Luke JV, Cynamon ML, Frankel MR. Recent trends in household telephone coverage in the United States. In J. M. Lepkowski et al. (Eds.), Advances in Telephone Survey Methodology (chapter 3). New York: J.W. Wiley and Sons, Inc. Forthcoming.

17. World Health Organization. International Classification of Functioning, Disability and Health (ICF) – Children and Youth. Geneva: World Health Organization. 2007.

18. Blumberg SJ, Osborn L, Luke J, et al. Estimating the prevalence of uninsured children: An evaluation of data from the National Survey of Children with Special Health Care Needs, 2001. National Center for Health Statistics. Vital Health Stat 2(136). 2004.

19. De Leeuw E, Callegaro M, Hox J, et al. The influence of advance letters on response in telephone surveys: a meta-analysis. Public Opinion Quarterly 71:413-443. 2007.

20. American Association for Public Opinion Research. Standard definitions: Final dispositions of case codes and outcome rates for surveys. Ann Arbor, MI: American Association for Public Opinion Research. 2006.

21. Brick JM., Waksberg J, Keeter S. Using data on interruptions in telephone service as coverage adjustments. Survey Methodology 22:185–197. 1996.

22. Davern M, Lepkowski J, Call KT, et al. Telephone service interruption weighting adjustments for state health insurance surveys. Inquiry 41:280–290. 2004.

23. Frankel MR, Srinath KP, Hoaglin DC, et al. Adjustments for non-telephone bias in random-digit-dialing surveys. Statistics in Medicine 22:1611–1626. 2003.

24. Schenker N, Gentleman JF. On judging the significance of differences by examining the overlap between confidence intervals. The American Statistician 55:182-186. 2001.

Text Tables

Table A. CSHCN Screener questions used in the 2005-06 survey

Stem Question	Follow-Up Questions
Introductory Statements The next questions are about any kind of health problems, concerns, or conditions that may affect your child's physical health, behavior, learning, growth, or physical development. Some of these health problems may affect your child's abilities and activities at school or at play. Some of these problems affect the kind or amount of services your child may need or use.	
1. Does your child currently need or use medicine prescribed by a doctor, other than vitamins?	(IF YES) Is your child's need for prescription medicine because of any medical, behavioral, or other health condition? (IF YES) Is this a condition that has lasted or is expected to last 12 months or longer?
2. Does your child need or use more medical care, mental health or educational services than is usual for most children of the same age?	(IF YES) Is your child's need for medical care, mental health or educational services because of any medical, behavioral, or other health condition? (IF YES) Is this a condition that has lasted or is expected to last 12 months or longer?
3. Is your child limited or prevented in any way in his or her ability to do the things most children of the same age can do?	(IF YES) Is your child's limitation in abilities because of any medical, behavioral, or other health condition? (IF YES) Is this a condition that has lasted or is expected to last 12 months or longer?
4. Does your child need or get special therapy, such as physical, occupational or speech therapy?	(IF YES) Is your child's need for special therapy because of any medical, behavioral, or other health condition? (IF YES) Is this a condition that has lasted or is expected to last 12 months or longer?
5. Does your child have any kind of emotional, developmental or behavioral problem for which he or she needs treatment or counseling?	(IF YES) Has your child's emotional, developmental or behavioral problem lasted or is it expected to last 12 months or longer?

NOTE: For households with more than one child, the phrase "does your child" was replaced with "do any of your children." Affirmative answers were followed by a question asking for the names or ages of the children with that particular health care consequence. The followup questions were then asked separately for each named child.

Table B. Percent of main sample called only for the National Survey of Children with Special Health Care Needs, by state

State	Percent
Alaska	4.1
Arkansas	0.4
Colorado	14.0
Delaware	2.4
Hawaii	4.5
Iowa	20.7
Idaho	34.2
Louisiana	0.6
Minnesota	6.7
Mississippi	3.7
North Carolina	3.5
Nevada	16.6
Oregon	16.8
Utah	35.5

Table C. External (Non-Government) Technical Expert Panel members

Name	Affiliation (in 2004)
Christina Bethell, Ph.D., M.B.A., M.P.H.	Kaiser Northwest Center for Health Research
Jeffrey Lobas, M.D., M.P.A.	Iowa Child Health Specialty Clinics
Paul Newacheck, Dr.P.H. (chairperson)	University of California at San Francisco
Virginia Sharp, M.A.	Children's Hospital and Regional Medical Center (Seattle, WA)
Phyllis Sloyer, R.N., M.P.A.	Florida Department of Health
Ruth Stein, M.D.	Albert Einstein College of Medicine of Yeshiva University
Nora Wells, M.S.Ed.	Family Voices / Federation for Children with Special Needs

Table D. Number of interviewers trained and certified by month and telephone center location

Month	Location						All locations	
	Chicago, IL		Downers Grove, IL[1]		Las Vegas, NV			
	Number Trained	Number Certified[2]	Number Trained	Number Certified	Number Trained	Number Certified	Number Trained	Number Certified
March 2005	20	20	0	0	0	0	20	20
April 2005	234	229	101	97	31	30	366	356
May 2005	22	21	27	25	16	15	65	61
June 2005	0	0	0	0	0	0	0	0
July 2005	0	0	0	0	0	0	0	0
August 2005	17	12	17	6	19	19	53	37
September 2005	76	67	53	48	70	58	199	173
October 2005	57	53	83	68	57	43	197	164
November 2005	95	80	64	51	20	13	179	144
December 2005	64	54	18	12	19	15	101	81
January 2006	0	0	0	0	0	0	0	0
February 2006	82	71	0	0	15	14	97	85
March 2006	41	33	0	0	37	26	78	59
April 2006	0	0	0	0	0	0	0	0
May 2006	14	10	0	0	21	14	35	24
June 2006	72	68	0	0	22	22	94	90
July 2006	21	17	. . .	. . .	18	18	39	35
August 2006	39	35	. . .	. . .	23	23	62	58
September 2006	68	66	. . .	. . .	33	32	101	98
October 2006	46	45	. . .	. . .	0	0	46	45
November 2006	0	0	. . .	. . .	22	22	22	22
December 2006	0	0	. . .	. . .	0	0	0	0
Total	968	881	363	307	423	364	1754	1552

. . . Not applicable.
[1]The Downers Grove telephone center closed on June 21, 2006.
[2]Following training, interviewers were required to pass two evaluations to be certified prior to making any calls.

Table E. Number of main sample interviews by state

State	Number of completed CSHCN screening interviews		Number of special-needs interviews	
	Households with children	Children under 18 years of age	Completed	Partially completed
All States	192,083	364,841	40,465	375
Alabama	3,179	5,796	751	7
Alaska	3,932	7,812	736	5
Arizona	3,913	7,872	778	5
Arkansas	3,203	5,807	769	8
California	5,748	11,275	929	10
Colorado	4,065	7,717	777	9
Connecticut	3,756	6,869	828	5
Delaware	3,056	5,605	744	7
District of Columbia	3,936	7,031	813	13
Florida	4,296	7,679	798	4
Georgia	3,871	7,081	786	4
Hawaii	4,303	8,162	752	8
Idaho	3,967	8,401	783	1
Illinois	4,090	7,821	789	13
Indiana	3,481	6,687	823	10
Iowa	3,697	7,214	788	9
Kansas	3,348	6,636	790	7
Kentucky	3,348	6,029	798	11
Louisiana	3,277	6,108	754	14
Maine	3,220	5,888	800	7
Maryland	3,508	6,468	784	3
Massachusetts	3,511	6,438	782	6
Michigan	3,497	6,805	813	7
Minnesota	3,531	6,837	760	5
Mississippi	3,560	6,582	753	9
Missouri	3,492	6,550	850	9
Montana	3,773	7,338	791	3
Nebraska	3,428	6,794	768	4
Nevada	4,849	9,686	743	8
New Hampshire	3,428	6,197	816	7
New Jersey	4,230	7,889	799	9
New Mexico	4,341	8,401	852	7
New York	4,818	8,835	837	14
North Carolina	3,496	6,319	762	10
North Dakota	4,027	7,755	761	3
Ohio	3,629	6,938	813	8
Oklahoma	3,239	6,217	794	8
Oregon	3,662	7,060	762	2
Pennsylvania	3,843	7,079	851	9
Rhode Island	3,704	6,783	841	10
South Carolina	3,986	7,174	836	15

State	Number of completed CSHCN screening interviews		Number of special-needs interviews	
	Households with children	Children under 18 years of age	Completed	Partially completed
South Dakota	4,033	8,028	783	7
Tennessee	3,440	6,367	782	12
Texas	4,380	8,515	840	5
Utah	3,685	8,553	752	6
Vermont	3,481	6,324	768	3
Virginia	3,446	6,251	784	6
Washington	4,031	7,521	823	2
West Virginia	3,187	5,706	774	10
Wisconsin	3,727	7,204	827	6
Wyoming	3,435	6,737	778	5

Table F. Number and percent of respondents by relationship to sampled child and by sample type

	Sample type			
	Main sample		Referent sample	
Relationship of respondent to sampled child	Number	Percent	Number	Percent
Total	40,840	100.0	6,113	100.0
Mother	31,810	77.9	4,560	74.6
Father	6,561	16.1	1,210	19.8
Grandparent	1,624	4.0	212	3.5
Other guardian	802	2.0	124	2.0
Unknown	37	0.1	5	0.1
Don't know/refused	6	<0.05	2	<0.05

Table G. Average length of interview in minutes and seconds, by interview type, by section, and by National Immunization Survey eligibility

Type and section of interview	NIS-eligible		NIS-ineligible	
	Mean	Median	Mean	Median
Main sample special-needs interview				
Overall length	24:09	22:50	27:50	26:28
Section 1: Age-Eligibility Screening	0:26	0:19	1:00	0:52
Section 2: Special Health Care Needs Screening	4:38	4:06	4:29	4:06
Section 3: Health and Functional Status	5:06	4:48	5:30	5:20
Section 4: Access to Care: Utilization and Unmet Needs	4:59	4:29	5:25	4:54
Section 5: Care Coordination	1:50	1:40	1:54	1:43
Section 6: Family Centered Care, Transition Issues, Ease of Service Use	3:08	2:42	3:30	3:13
Section 7: Health Insurance	1:10	1:05	1:17	1:10
Section 8: Adequacy of Health Care Coverage	0:41	0:36	0:44	0:38
Section 9: Impact on the Family	2:16	2:06	2:19	2:09
Section 10: Family Composition	0:38	0:22	0:52	0:37
Section 11: Income and Other Demographics	0:15	0:09	0:55	0:47
Main sample screening only				
Overall length	3:23	2:53	4:56	4:26
Section 1: Age-Eligibility Screening	0:27	0:19	1:00	0:52
Section 2: Special Health Care Needs Screening	2:41	2:20	2:41	2:25
Section 10: Family Composition	0:25	0:13	0:28	0:15
Section 11: Income and Other Demographics	0:17	0:15	0:47	0:39
Referent sample interview				
Overall length	18:35	17:45	23:07	21:58
Section 1: Age-Eligibility Screening	0:29	0:20	1:07	0:53
Section 2: Special Health Care Needs Screening	2:22	2:06	3:11	2:54
Section 3: Health and Functional Status	5:03	4:51	5:32	5:09
Section 4: Access to Care: Utilization and Unmet Needs	3:52	3:31	4:17	3:56
Section 5: Care Coordination	1:42	1:31	1:45	1:35
Section 6: Family Centered Care, Transition Issues, Ease of Service Use	3:02	2:42	3:28	3:12
Section 7: Health Insurance	1:14	1:06	1:19	1:11
Section 8: Adequacy of Health Care Coverage	0:42	0:39	0:44	0:38
Section 9: Impact on the Family	2:11	2:01	2:12	2:03
Section 10: Family Composition	0:26	0:23	0:41	0:36
Section 11: Income and Other Demographics	0:15	0:08	0:55	0:46

NOTES: NIS is National Immunization Survey. NIS eligibility refers to household eligibility. NIS-eligible households include at least one child between 19 and 35 months of age. The NIS-eligible child in the household may or may not have been the child sampled for the National Survey of CSHCN interview.

Table H. Final disposition of the survey sample by sample type

Final disposition	Number of selected telephone lines	Percent of total selected telephone lines
Main sample		
Total	4,014,991	100.0
Not resolved as residential/nonresidential	662,265	16.5
Out of scope (i.e., business, nonworking, fax/modem)	2,403,933	59.9
Known household, age eligibility not determined	105,430	2.6
Age-screened household, no child in age range	604,319	15.1
Known age-eligible household, special needs eligibility not determined	46,960	1.2
Special-needs eligibility determined, no eligible child	147,159	3.7
Known household with CSHCN, interview not completed	4,085	0.1
Known household with CSHCN, partially completed interview	375	<0.05
Known household with CSHCN, completed interview	40,465	1.0
Referent sample		
Total	146,695	100.0
Not resolved as residential/nonresidential	25,601	17.5
Out of scope (i.e., business, nonworking, fax/modem)	85,781	58.5
Known household, age eligibility not determined	4,230	2.9
Age-screened household, no child in age range	22,130	15.1
Known age-eligible household, interview not completed	2,840	1.9
Known age-eligible household, partially completed interview	75	0.1
Known age-eligible household, completed interview	6,038	4.1

Table J. Main sample weighted response rates, nationally and by state

State	Household level resolution rates	Household-level completion rates		Child-level completion rates		Overall response rates	
		Age screener	Special-needs screener	Special-needs screener	Special-needs interview	Special-needs screener[1]	Special-needs interview[2]
National	82.7	88.4	79.7	79.0	96.2	57.8	56.1
Alabama	82.4	88.7	80.7	79.6	96.1	58.2	56.7
Alaska	86.6	90.7	82.3	81.7	97.2	64.2	62.8
Arizona	82.3	88.0	81.4	80.9	96.3	58.6	56.8
Arkansas	87.3	91.1	80.8	80.0	97.3	63.6	62.5
California	79.1	85.6	78.5	77.1	95.1	52.2	50.5
Colorado	83.3	89.6	81.7	80.7	95.3	60.2	58.1
Connecticut	80.8	87.8	80.0	79.2	95.7	56.2	54.3
Delaware	77.5	88.1	77.8	76.8	95.6	52.4	50.8
District of Columbia	79.9	88.2	80.2	78.9	96.5	55.6	54.5
Florida	80.3	87.6	77.4	76.4	95.2	53.7	51.8
Georgia	83.8	88.2	78.9	77.9	96.0	57.6	56.0
Hawaii	84.9	86.4	72.7	71.3	96.1	52.3	51.2
Idaho	84.8	88.9	82.5	82.2	97.0	62.0	60.3
Illinois	83.8	89.1	77.8	76.9	96.8	57.4	56.2
Indiana	85.7	90.5	80.6	79.8	96.8	61.9	60.5
Iowa	87.2	91.5	83.0	82.4	96.5	65.7	63.9
Kansas	87.1	90.9	83.5	83.2	97.7	65.9	64.6
Kentucky	84.9	90.0	80.9	80.6	97.0	61.6	60.0
Louisiana	86.9	87.6	79.3	79.3	94.5	60.4	57.0
Maine	84.3	91.0	82.5	82.1	97.2	63.0	61.5
Maryland	79.6	87.4	79.2	78.2	95.8	54.4	52.8
Massachusetts	80.0	87.8	79.4	79.1	96.4	55.6	53.8
Michigan	84.7	89.6	81.4	80.9	96.2	61.4	59.4
Minnesota	86.6	91.1	81.8	80.7	97.0	63.7	62.6
Mississippi	84.6	88.1	79.0	78.1	94.0	58.2	55.3
Missouri	85.9	90.6	81.8	80.7	96.6	62.8	61.5
Montana	88.3	91.9	85.5	85.5	97.7	69.4	67.8
Nebraska	88.8	91.5	83.6	83.2	96.7	67.6	65.7
Nevada	78.1	85.7	78.0	78.0	96.2	52.2	50.2
New Hampshire	80.2	89.0	82.2	81.2	96.6	58.0	56.7
New Jersey	77.1	86.3	77.1	76.4	96.1	50.8	49.3
New Mexico	84.6	89.1	81.9	81.6	97.4	61.5	60.1
New York	81.2	87.1	77.3	76.4	96.3	54.0	52.6
North Carolina	82.8	88.8	79.4	78.7	95.7	57.9	55.9
North Dakota	89.4	92.4	85.1	84.6	97.1	69.9	68.3
Ohio	85.4	90.1	81.4	81.2	96.1	62.5	60.2
Oklahoma	85.6	89.9	81.4	81.3	96.7	62.6	60.6
Oregon	85.3	89.8	81.5	81.4	96.2	62.4	60.1
Pennsylvania	81.7	89.6	81.4	80.6	95.9	59.0	57.1

State	Household level resolution rates	Household-level completion rates		Child-level completion rates		Overall response rates	
		Age screener	Special-needs screener	Special-needs screener	Special-needs interview	Special-needs screener[1]	Special-needs interview[2]
Rhode Island	81.9	88.3	78.8	78.4	95.4	56.7	54.4
South Carolina	82.7	88.3	79.1	77.7	95.9	56.7	55.4
South Dakota	89.9	92.0	83.8	83.5	96.8	69.1	67.1
Tennessee	83.5	90.2	80.8	80.6	96.2	60.7	58.5
Texas	82.8	87.0	77.7	77.5	96.7	55.8	54.1
Utah	85.3	88.7	81.4	81.8	96.7	61.9	59.6
Vermont	84.6	91.1	84.4	84.4	96.9	65.0	63.0
Virginia	81.2	89.3	80.6	79.8	96.5	57.9	56.4
Washington	83.3	89.6	82.3	81.2	96.8	60.6	59.5
West Virginia	81.0	90.5	81.4	81.0	96.3	59.4	57.5
Wisconsin	85.7	91.2	83.2	82.6	97.0	64.6	63.1
Wyoming	84.3	91.0	84.5	84.5	97.6	64.8	63.3

[1]Special-needs screener response rate is the product of the household-level resolution rate, the household-level age-screener completion rate, and the child-level special-needs screener completion rate.

[2]Special-needs interview response rate is the product of the household-level resolution rate, the household-level age-screener completion rate, the household-level special-needs screener completion rate, and the child-level special-needs interview completion rate.

Appendix I

Sampling Technical Summary

Sample Design

The basic design objective of the National Survey of CSHCN main sample was to select a sample of 750 children less than 18 years of age with special health care needs in each state and DC. The referent sample was designed to select a national sample of 6,000 children less than 18 years of age irrespective of special-needs status. The samples were selected by first identifying households with children under the age of 18 and then screening within these households for the presence of CSHCN. In all main sample households where CSHCN were present, one such child was selected. In all referent sample households, one child less than 18 years of age was selected as the target of the special needs screening and subsequent interview.

Drawing NIS Sample

The sample of households selected for screening for the National Survey of CSHCN was a subsample of the households screened for the National Immunization Survey (NIS), a continuous list-assisted random-digit-dial (RDD) survey administered in each of 50 state and 28-30 metropolitan estimation areas. Therefore, the sampling design for the selection of households in the National Survey of CSHCN was essentially the same as the design for the selection of households in the NIS. A brief description of the procedure for the selection of households in the NIS is given below. For more detail on the NIS sample design, readers are encouraged to obtain the 2005 NIS Methodology Report (9), which is available from NCHS.

Associating Telephone Numbers with Estimation Areas

To draw a sample of telephone numbers in an estimation area, one must compile a list of all telephone numbers that belong to that area. For some estimation areas, this step is straightforward. For example, when the estimation area is a state, the list would consists of all telephone numbers within the central-office codes that are in service in the area codes assigned to that state. (Combined, an area code and a central-office code form a "prefix area." For example, 312-555-xxxx is the prefix area corresponding to the 555 central office in the 312 area code.)

For other estimation areas, however, this step encounters a number of complications. When the estimation area is a city, county, or combination of counties, some prefix areas may cover part of the estimation area and part of an adjacent estimation area. In such situations, the NIS applies a plurality rule: If at least 50% of the directory-listed households in a prefix area fall inside an estimation area, the prefix area is assigned to that estimation area.

Drawing Initial NIS Sample

The sampling frame for an estimation area consists of banks of 100 consecutive telephone numbers within the prefix areas assigned to the sample estimation area. Banks that contain wireless (i.e., cell-phone) telephone numbers are excluded from the frame. Banks that contain zero directory-listed residential telephone numbers are also excluded from the frame because they have very little chance of containing working residential numbers. To exclude banks that contain zero directory-listed residential telephone numbers, the GENESYS Sampling System (a proprietary product of Marketing Systems Group (MSG)) uses a file of directory-listed residential numbers from Donnelley Marking Information Services (DMIS). The result is a file that lists the remaining banks (the "1+ working banks"). From the 1+ working banks, a random sample of complete ten-digit telephone numbers is drawn for each quarter in such a way that each number has a known and equal probability of selection. Within each estimation area, the sample is then segmented into replicates, or representative subsamples, with each replicate containing sample telephone numbers from each of the estimation areas. Segmenting the sample into replicates allows the release of telephone numbers over time in a controlled manner.

Updating NIS Sampling Frame

The set of telephone banks with at least one directory-listed residential telephone number changes over time. As a result, the sampling frame needs to be updated on a quarterly basis. Area-code splits produce additional changes to the sampling frame. MSG maintains a separate sampling frame for each estimation area. Each quarter, MSG examines the database to determine whether any currently included banks should be assigned to different estimation areas and to assign newly included banks to estimation areas. The rules for assignment are the same as in the initial definitions of the estimation areas.

Once all modifications have been made to the database, a number of checks ensure that all changes have been applied correctly and that the new database produces samples consistent with those produced prior to the changes. These checks compare the numbers of active banks and RDD-selectable lines in each estimation area before and after the update. In parallel, the numbers of exchanges assigned to each estimation area before and after the update are compared. Small changes are expected because new banks are put into service as new numbers are assigned. In the event of a major discrepancy in any of these checks, MSG is notified of the difference and asked to provide documentation of the reasons for the change.

Preparation of the Sample

Coordinated management of the sample follows a sequence of steps. The initial quarterly sample for each estimation area is divided into replicates. Before a replicate is loaded into the CATI system, several stages of processing remove as many businesses and nonworking numbers as possible. A separate step matches the telephone numbers in the sample against a large database to obtain addresses so that advance letters can be sent. Telephone numbers on the NIS's "Do Not Call List" are removed from the sample. Each quarter, any duplicate telephone numbers

(i.e., numbers that have appeared in the sample in the three prior quarters) are identified and omitted from the sample files.

Forming NIS Sample Replicates

The NIS divides the sample in each estimation area into 26 representative subsamples or "replicates." This procedure permits smoother release of the sample (at the rate of one or two replicates per week) for each estimation area separately, as needed. Toward the end of the quarter, half-size replicates allow tighter control over the total amount of sample released. The aim is to produce an even distribution of work in the telephone center over the course of data collection.

Removing Business and Nonworking Numbers

Over two-thirds of all selected telephone numbers are typically businesses or unassigned. It would be incredibly inefficient to require the interviewers to dial and classify all of these numbers. To prevent that potential expense, the NIS uses another MSG product (a companion to the GENESYS Sampling System) to quickly and accurately reduce the size of this task.
First, the selected sample is matched against a GENESYS file containing telephone numbers that are directory-listed in a business Yellow Pages and are not directory-listed in a residential White Pages. Any business numbers so identified are removed from the sample.

Second, numbers listed in residential White Pages are identified and temporarily set aside.

Third, a hardware system (GENESYS-IDplus) screens the remaining sample to remove a portion of the non-working numbers. Using personal computers with special hardware and software, this system (the "autodialer") automatically dials the telephone numbers to detect non-working numbers, which are indicated by the familiar tri-tone signal for out-of-service numbers, by an extended period of silence, or by continuous noise on the line. The precursor to GENESYS-IDplus, called GENESYS-ID, minimized intrusiveness by hanging up as soon as it detected a number starting to ring. However, sometimes non-working numbers ring one or more times before the tri-tone occurs. GENESYS-ID did not identify such non-working numbers, which were a significant proportion of the total in some estimation areas. GENESYS-IDplus identifies more non-working-number tri-tones by letting numbers ring two times before hanging up. Nationally, 15% to 20% of the dialed numbers ring and are answered. To minimize the number of answered calls, the system is used only during the day, and the answered calls are routed to an attendant who says, "Sorry, I must have dialed the wrong number."

Finally, the directory-listed residential numbers are combined with the numbers that were not removed by the autodialer to produce the sample for the telephone center. The numbers removed within released replicates are considered pre-screened and assigned disposition codes indicating they are resolved, non-residential numbers.

Ported Wireless Telephones

A significant recent development in the telecommunications industry is the Federal Communication Commission (FCC) regulation on portability. Local number portability allows wireless telephone customers (that is, cell-phone owners) to switch from one company to another while retaining the same telephone number. There are three ways in which consumers can take advantage of the new number portability provisions: 1) wireless-to-wireless, 2) wireless-to-wireline, and 3) wireline-to-wireless.

Wireless telephone numbers are not knowingly included in the RDD sampling frame. Therefore, the first way to make a number portable does not impact the RDD sampling strategy. The second way results in a small number of otherwise eligible households who would not be included in the RDD sampling frame. The third way (i.e., porting of wireline numbers to wireless service providers) is more troublesome when creating RDD samples, as it creates the very real and increasingly likely possibility of inadvertently including wireless telephone numbers in the RDD samples.

FCC rules (implementing the Telephone Consumer Protection Act of 1991) bar automated calls to wireless telephone numbers. To pre-identify landlines that have been ported to wireless telephones, the selected NIS sample is matched to the NeuStar database, which contains the national list of ported telephone numbers. Each quarterly sample is compared to the database and the ported numbers flagged accordingly. The flagged numbers are assigned an out-of-scope disposition code and are not called. The numbers in released replicates are also matched to the NeuStar database on a daily basis to identify any newly ported numbers that have not already been finalized within the telephone center. If a number is dialed and found to have been forwarded to a wireless telephone, the call is immediately terminated and classified as out of scope without seeking an interview.

Obtaining Addresses for Advance Letters

To obtain addresses that correspond to telephone numbers in the sample, the numbers for each replicate are sent to a vendor who maintains a large database, updated daily, that includes most residential and business telephone numbers, including unpublished telephone numbers. Data are compiled from sources such as call centers and companies in telecommunications, registration cards for consumer goods, and the insurance and credit industries.

After the sample has been prepared, the use of this vendor's reverse-match system yielded addresses for about 58% of telephone numbers loaded into the CATI system. Advance letters were sent to these addresses approximately 10 days, or two weekends, prior to the time when the telephone numbers in the corresponding replicates were scheduled to be called.

"Do Not Call" Requests

A file is maintained containing telephone numbers of people who have requested that they not be called. Each quarter's sample is compared with this file, and numbers contained in the "Do Not Call List" are not included in the quarterly sample of numbers loaded into the CATI system.

Duplicate Telephone Numbers

Because of the repeated quarterly sampling operations in each estimation area, some telephone numbers were selected more than once during the course of data collection for the National Survey of CSHCN. To avoid any respondent problems created by re-contacts for the same survey, a further sample preparation step identified duplicate numbers. Each quarterly sample file was compared with all sample files for prior quarters, and the duplicate numbers were excluded. Thus, the quarterly samples were essentially selected by a method of without replacement sampling. However, analysts are reminded to invoke "with replacement sampling" in SUDAAN for accurate variance estimation.

Appendix II

Computing Sampling Weights for Main Sample

This appendix summarizes the methodology used to weight the 2005-06 National Survey of CSHCN main sample. For the main sample, three set of weights were produced—a household weight, a child screener weight, and a child interview weight. The weighting scheme mirrored as much as possible the weighting scheme for the NIS. The first few weighting steps for the National Survey of CSHCN were the same as the corresponding weighting steps for the NIS. The formation of various adjustment cells and raking dimensions was slightly different.

The weighting scheme for the main sample involved the following steps:

1. Base sampling weight
2. Adjustment for nonresolution (i.e., working-residential-number status is never determined) of released telephone numbers
3. Adjustment for incomplete age-eligibility screener
4. Adjustment for incomplete CSHCN screener
5. Adjustment for multiple telephone lines
6. Raking adjustment of household weights (includes an adjustment for nontelephone households)
7. Raking adjustment of child screener weights
8. Adjustment for subsampling of children with special health care needs.
9. Adjustment for nonresponse to the CSHCN interview
10. Raking adjustment of the nonresponse-adjusted CSHCN interview weights.

Weighting steps 1 to 6 above applied to households, step 7 applied to all children, and the remaining steps (8 to 10) applied to CSHCN. Each individual weighting step is discussed in detail below.

Step 1: Base Weights

The weighting process starts with computing the base weights of the sampled telephone numbers, where the base weight is the reciprocal of the selection probability of a telephone number. The base weight for the *k*-th telephone number in the released sample *A* is defined by

$$W_{1k} = \frac{1}{\pi_k} = \left(\frac{N_q}{n_q}\right)\left(\frac{n_q}{\sum_q n_q}\right) \ , \ k \in q \quad \text{where}$$

π_k = probability of selecting the *k*-th telephone number in the NIS estimation area,

n_q = sample size (released replicates) in quarter *q* in the estimation area, and

N_q = total telephone numbers on the sampling frame in quarter *q* in the estimation area, as determined by GENESYS.

The base weight is a constant for all telephone numbers selected in a quarter within a given estimation area. In some cases, due to changes in the definition of estimation areas, two estimation areas were part of a single estimation area in earlier quarters but separated into two independent estimation areas in later quarters. Where this occurred, the quarterly base weights in earlier quarters for both estimation areas were computed under the combined estimation area to reflect the sampling process. However, in combining the quarterly base weights to produce the overall base weights, the two estimation areas were treated separately.

Step 2: Adjustment for Non-Resolution of Telephone Numbers

Once the sample of telephone numbers was released, the first step was to identify whether the number is a working residential number (WRN) or not. However, even after repeated callbacks, the WRN-status of many telephone numbers remains unresolved. An adjustment to the weight of resolved cases is necessary to account for cases for which the WRN-status is unknown.

We first form a number of adjustment cells by controlling for known covariates. The cells were formed using a different set of variables within estimation areas in different census regions. The directory-listed status of a telephone number appears to be a very important predictor of nonresponse in all stages of nonresponse and was always the first covariate in forming the cells. Table I shows the list of additional covariates that were used in forming adjustment cells within each estimation area. The variables were identified through analyses of correlates with nonresponse.

The adjustment in each cell is made by assuming that the rate of WRNs among unresolved numbers is the same as the rate of WRNs among resolved numbers. The adjusted weights are computed as follows.

$$W_{2k} = \frac{W_{1k}}{R_{2\ell}} \quad \text{if } k \in B$$
$$= 0 \quad \text{otherwise,}$$

where,

$$R_{2\ell} = \frac{\sum_{k\in B} \delta_{2k\ell} W_{1k}}{\sum_{k\in A} \delta_{2k\ell} W_{1k}},$$

B = subset in A of resolved telephone numbers (WRN or non-WRN), and

$$\delta_{2k\ell} = 1 \quad \text{if } k \text{ is in the } \ell\text{-th cell}$$
$$= 0 \quad \text{otherwise.}$$

The covariates listed in Table I are dichotomous categorical variables (based on whether the value of a variable is greater or less than the median value) which were derived from continuous variables available on the frame. The adjustment cells needed to include at least 20

resolved cases to enable stable estimation of the adjustment factor, $R_{2\ell}$. To achieve this goal when the number of resolved cases was less than 20, adjustment cells were collapsed by dropping covariates in order of importance, with cells formed by the least important covariates collapsed first.

Step 3: Adjustment for Incomplete Age-eligibility Screener

Among the resolved WRNs, the age-eligibility screener is incomplete for some telephone numbers. For such cases, it is not known if any age-eligible children live in the household. To compensate for this, the weights of the telephone numbers with completed age-eligibility screeners are adjusted. The adjusted weight for the *k*-th number is

$$\begin{aligned} W_{3k} &= \frac{W_{2k}}{R_{3\ell}} \quad \text{if } k \in C \\ &= 0 \quad \text{otherwise,} \end{aligned}$$

where

$$R_{3\ell} = \frac{\sum_{k \in C} \delta_{3k\ell} W_{2k}}{\sum_{k \in B_1} \delta_{3k\ell} W_{2k}},$$

C = subset of telephone numbers in B that complete the age screening interview,

B_1 = subset of telephone numbers in B that are WRNs, and

$\delta_{3k\ell}$ = 1 if the *k*-th number is in the ℓ-th cell

= 0 otherwise.

As discussed above, the adjustment cells were formed by using covariates as listed in Table I. The adjustment cells needed to include at least 20 cases to enable stable estimation of the adjustment factor, $R_{3\ell}$. To achieve this goal when the number of responding cases was less than 20, adjustment cells were collapsed by dropping covariates in order of importance, with cells formed by the least important covariates collapsed first.

Step 4: Adjustment for Incomplete CSHCN Screener

Once the age-eligibility screener is completed, another screener is applied to identify the households with CSHCN. However, not all age-eligible households complete the CSHCN Screener. To compensate for such nonresponding households, the weights of the telephone numbers with a complete CSHCN Screener are adjusted. The adjusted weight for the *k*-th telephone number is

$$W_{4k} = \frac{W_{3k}}{R_{4\ell}} \quad \text{if } k \in D$$
$$= 0 \quad \text{otherwise,}$$

where

$$R_{4\ell} = \frac{\sum_{k \in D} \delta_{4k\ell} W_{3k}}{\sum_{k \in C_1} \delta_{4k\ell} W_{3k}},$$

D = subset of telephone numbers in C that complete the CSHCN Screener,

C_1 = subset of telephone numbers in C that include age-eligible children, and

$\delta_{4k\ell}$ = 1 if the k-th number is in the ℓ-th cell

= 0 otherwise.

The adjustment cells were formed by using covariates as listed in Table I. The adjustment cells needed to include at least 15 cases to enable stable estimation of the adjustment factor, $R_{4\ell}$. To achieve this goal when the number of responding cases was less than 15, adjustment cells were collapsed by dropping covariates in order of importance, with cells formed by the least important covariates collapsed first.

Step 5: Adjustment for Multiple Telephone Lines

Among the households that completed the CSHCN Screener, some report more than one telephone landline for home use (excluding the lines used only for fax or computer). An adjustment to the weight is required for these households to compensate for their multiple chances of selection. The multiple telephone adjusted weight for the k-th household in D is defined by

$$W_{5k} = W_{4k} / t_k \ ,$$

where

W_{4k} = the weight inherited by the k-th household from Step 4,

t_k' = number of telephone landlines for home use, excluding the lines used only for fax or computer communication, reported by the k-th household in the completed interview, and

t_k = $\min(3, t_k')$.

The number of landlines is capped at 3 for purposes of the weight adjustment to control variability and guard against reporting bias.

Step 6: Raking Adjustment of Household Weights

The full-sample household weights (W_{5k}) with a complete CSHCN Screener are raked such that the sums of the weights at the household level agree with the control totals in each category of each margin used for raking. The required control totals are obtained from the annual population estimates published by the Census Bureau and from the Current Population Survey (CPS). The raking adjustments within each state and DC are made using the following margins and categories:

- Number of households with children without interruption in telephone service and number of households with children with an interruption in telephone service for at least 1 week during the past 12 months plus nontelephone households.
- Number of households with children in each of three nonoverlapping race/ethnicity categories: households with at least one Hispanic child, households with no Hispanic child but with at least one non-Hispanic African-American child, and households with non-Hispanic children of other races.
- Number of households with one child, two children, and three or more children.
- Number of households with children that have a household income in each of five nonoverlapping categories.
- Number of households with children where the highest reported educational attainment is less than a high school education, high school, or more than high school.

An adjustment for the noncoverage of nontelephone households (21-23) is part of the raking adjustments at both the household and child levels. Households with interruption in telephone service represent themselves and are used to represent the households without telephones. For the control totals corresponding to telephone-interruption status, the total number of households with children in the population is split into households with telephones and without telephones based on CPS data. The total number of telephone households is further split into households with an interruption in telephone service and without an interruption in service based on the weighted estimated proportions from the 2005-06 National Survey of CSHCN itself. The weights of households with an interruption in telephone service are adjusted to account for households without telephones.

In some cases, the values of the raking variables mentioned above may be missing. The missing values for all these variables are imputed using a weighted sequential hot deck imputation method after forming appropriate imputation classes.

The raked weight for the *k*-th household is

$$\begin{aligned} W_{6k} &= R_{6k} W_{5k} && \text{if } k \in D \\ &= 0 && \text{otherwise,} \end{aligned}$$

where, R_{6k} is the raking adjustment factor for the *k*-th household which is determined iteratively and D is the set of all telephone numbers that complete the CSHCN Screener as defined above.

At this stage, the weights are checked and all extreme weights are trimmed to avoid any undue influence on the variances of the estimates. Any weight greater than the median plus six times the interquartile range of the weights within a given state is identified as an extreme weight and truncated to this cutoff value. The raking adjustment is rerun after truncating the extreme weights. In fact, the process of truncation and raking adjustment is repeated a few times to ensure that no weight is greater than the trimming cutoff value within a state.

The raked household weight is the final weight to be used to obtain all household-level estimates. This household screener weight appears on the Household File, denoted by WEIGHT_H. Household screener weighting detail by state appears in table II.

The next step in weighting will shift to the child-level. The base child-level weight is the same as the corresponding raked household weight.

Step 7: Raking Adjustment of Child Weights

Since all children within households that completed the CSHCN Screener (i.e., set *D*) are included for the child-level analysis, the base child screener weight is the same as the final household weight. This weight is assigned to each child in the screened households.
The child screener weights are adjusted such that the sum of the weights agrees with the control totals in various categories of the following margins within each state and DC:

- Number of male and female children in four age groups: 0-4 years, 5-9 years, 10-14 years, and 15-17 years.
- Number of children of various race and ethnic backgrounds. Within each state, race and ethnicity categories with small counts of screened cases were collapsed with the majority non-Hispanic race category.
- Number of children in households without an interruption in telephone service and number of children in households with an interruption in telephone service for at least 1 week during the past 12 months plus number of children in nontelephone households.
- Number of children in households with one child, households with two children, and households with three or more children.
- Number of children in households that have a household income in each of five nonoverlapping categories.
- Number of children in households where the highest reported educational attainment is less than a high school education, high school, or more than high school.

The control totals for the categories of the above margins are obtained from the annual population estimates published by the Census Bureau and the CPS. The categories of raking dimensions are collapsed where the number of cases is not sufficient or if there is any difficulty in raking convergence.

The raked weight for the *j*-th child ($j \in k$) can be expressed as

$$\begin{aligned} W_{7j} &= R_{7j} W_{6k} && \text{if } j \in E \\ &= 0 && \text{otherwise,} \end{aligned}$$

where, R_{7j} is the raking adjustment factor for the *j*-th child and E is the set of children in set D (households that completed the CSHCN Screener).

The raked child screener weight is the final weight for all screener-level tabulations, including estimating the proportion of CSHCN. This child screener weight appears on the Screener File, denoted by WEIGHT_S. Child screener weighting detail by state appears in table III.

The remaining steps in weighting deal with weights for sampled CSHCN.

Step 8: Adjustment for Subsampling of Children with Special Care Needs

In households with more than one child with special health care needs, only one child is selected randomly per household for the special-needs interview. The child screener weights are adjusted to account for the CSHCN that are not selected. The subsampling weight for the *k*-th child is defined by

$$\begin{aligned} W_{8j} &= n_k W_{7j} && \text{if } j \in F \\ &= 0 && \text{otherwise,} \end{aligned}$$

where

F = subset of children in E that are subsampled for CSHCN interview, and
n_k = the number of CSHCN children in household *k*, where $j \in k$.

This is the basic child-level weight for the CSHCN interview.

Step 9: Adjustment for Nonresponse to the CSHCN Interview

Interviews were not completed for all CSHCN selected for the special-needs interview. The base child interview weight assigned to a child with a completed special-needs interview is adjusted for the nonresponse of other households with selected CSHCN. The adjustment is made by forming nonresponse adjustment cells (q). The adjusted weight for the *j*-th child is

$$\begin{aligned} W_{9j} &= \frac{W_{8j}}{R_{9q}} && \text{if } j \in G \\ &= 0 && \text{otherwise,} \end{aligned}$$

where

$$R_{9q} = \frac{\sum_{j \in G} \delta_{9kq} W_{8k}}{\sum_{j \in F} \delta_{9kq} W_{8k}},$$

G = subset of all children in F that complete the special-needs interview, and

δ_{9jq} = 1 if the j-th number is in the q-th adjustment cell

= 0 otherwise.

The adjustment cells (q) were formed using age, race, and household income groups (listed here in order of importance as defined by the survey goals and objectives). The adjustment cells needed to include at least 15 cases to enable stable estimation of the adjustment factor, R_{9q}. To achieve this goal when the number of responding cases was less than 15, adjustment cells were collapsed by dropping variables in order of importance, with cells formed by the least important demographic groups collapsed first.

Step 10: Raking Adjustment of Nonresponse-Adjusted Weights

The nonresponse-adjusted child interview weight is further adjusted such that the weighted number of CSHCN based on the final child interview weight is the same as the weighted number of CSHCN based on the final child screener weight. This adjustment utilizes the slightly higher stability of the weighted totals based on the larger sample of screened children instead of the weighted totals based only on the subsampled CSHCN with completed special-needs interview.

The adjustment is made by various categories of the following margins within each state and DC:

- Number of male and female CSHCN in four age groups: 0-4 years, 5-9 years, 10-14 years, and 15-17 years.
- Number of CSHCN of various race and ethnic backgrounds. Within each state, race and ethnicity categories with small counts of screened cases were collapsed with the majority non-Hispanic race category.
- Number of CSHCN in households with one child, households with two children, and households with three or more children.
- Number of CSHCN in households that have a household income in each of five nonoverlapping categories.
- Number of CSHCN in households where the highest reported educational attainment is less than a high school education, high school, or more than high school.

The raked weight of the j-th child is

$$W_{10j} = R_{10j} W_{9j} \quad \text{if } j \in G$$

$$= 0 \quad \text{otherwise,}$$

where R_{10j} is the raking adjustment factor for the *j*-th child.

At this stage, the weights are checked and all extreme weights are trimmed to avoid any undue influence on the variances of the estimates. Any weight greater than the median plus six times the interquartile range of the weights within a given state is identified as an extreme weight and truncated to this cutoff value. The raking adjustment is rerun after truncating the extreme weights. In fact, the process of truncation and raking adjustment is repeated a few times to ensure that no weight is greater than the trimming cutoff value within a state.

This raked child weight is the final weight for all estimation and analysis for the children with special health care needs. This child interview weight appears on the Interview File, denoted by WEIGHT_I. Child interview weighting detail by state appears in table IV.

Table I. Covariates used to create nonresponse adjustment cells at different nonresponse adjustment stages

Census region, telephone number listing status, and nonresponse adjustment stage	Covariates[1]
Northeast	
Listed estimation area	
Nonresolution Adjustment	Age[2], Education[3], Minority[4]
Age-Eligibility Screener Nonresponse Adjustment	Owner[5], Minority, Income[6], Age
CSHCN Screener Nonresponse Adjustment	Minority, Graduates[7], Rent[8]
Unlisted estimation area	
Nonresolution Adjustment	Rent, MSA[9], Graduates, Owner
Age-Eligibility Screener Nonresponse Adjustment	Age, MSA, Education
CSHCN Screener Nonresponse Adjustment	Rent, MSA
Midwest	
Listed estimation area	
Nonresolution Adjustment	Age, Owner, Minority
Age-Eligibility Screener Nonresponse Adjustment	Minority, Owner, Income
CSHCN Screener Nonresponse Adjustment	MSA, Education
Unlisted estimation area	
Nonresolution Adjustment	MSA, Owner, Minority, Rent
Age-Eligibility Screener Nonresponse Adjustment	Age, MSA, Graduates
CSHCN Screener Nonresponse Adjustment	MSA, Education
South	
Listed estimation area	
Nonresolution Adjustment	Age, Owner, Minority
Age-Eligibility Screener Nonresponse Adjustment	Owner, Income, Age, Rent
CSHCN Screener Nonresponse Adjustment	Minority, Education
Unlisted estimation area	
Nonresolution Adjustment	MSA, Rent, Minority
Age-Eligibility Screener Nonresponse Adjustment	Owner, Age, Education
CSHCN Screener Nonresponse Adjustment	Graduates, Minority
West	
Listed estimation area	
Nonresolution Adjustment	Age, Owner, Education
Age-Eligibility Screener Nonresponse Adjustment	Age, Owner, Education
CSHCN Screener Nonresponse Adjustment	Minority, Education, MSA
Unlisted estimation area	
Nonresolution Adjustment	Minority, Rent, MSA, Graduates
Age-Eligibility Screener Nonresponse Adjustment	Age, MSA, Owner, Minority
CSHCN Screener Nonresponse Adjustment	Graduates, Minority

[1]Covariates are listed in order of importance within a group, based on the strength of the relationship between the covariate and observed nonresponse rates.
[2]Median age in years of the population in the telephone exchange. Median = 36.18.
[3]Median years of education achieved for the population in the telephone exchange. Median = 13.10.
[4]Percent of population in the telephone exchange who are non-white. Median = 19.70.
[5]Percent of owner-occupied homes in the telephone exchange. Median = 71.40.
[6]Median household income for the telephone exchange, in thousands of dollars. Median = 48.49.
[7]Percent of population in the telephone exchange who are college graduates. Median = 23.30.
[8]Median monthly rent in the telephone exchange, in dollars. Median = 541.00.
[9]Telephone number is or is not in a Metropolitan Statistical Area (MSA).

Table II. Summary statistics for household weights by state

State	Unweighted sample size	Minimum weight	Maximum weight	Mean weight	Median weight	Sum of weights
Alabama	3,174	16.5	608.8	190.1	175.6	603,525.0
Alaska	3,930	6.7	61.6	25.3	24.9	99,331.0
Arizona	3,909	48.6	594.8	222.0	204.9	867,869.0
Arkansas	3,198	19.0	367.3	118.3	100.9	378,423.0
California	5,769	23.8	5,653.4	864.5	733.4	4,987,331.0
Colorado	4,070	30.4	464.1	165.2	145.5	672,549.0
Connecticut	3,759	13.4	305.8	132.8	120.8	499,106.0
Delaware	3,048	7.4	110.6	37.9	33.8	115,370.0
District of Columbia	3,925	2.5	38.8	14.8	12.7	58,137.0
Florida	4,292	7.7	1,670.4	505.2	536.2	2,168,289.0
Georgia	3,875	7.6	1,173.8	337.6	312.4	1,308,027.0
Hawaii	4,298	7.6	106.9	38.3	39.2	164,799.0
Idaho	3,959	11.1	116.3	53.3	50.7	211,133.0
Illinois	4,101	16.4	1,497.0	412.7	470.6	1,692,578.0
Indiana	3,480	15.3	927.8	238.7	249.8	830,639.0
Iowa	3,702	17.3	231.2	106.2	99.4	393,172.0
Kansas	3,351	16.4	347.9	110.9	105.3	371,784.0
Kentucky	3,356	20.1	489.7	167.6	154.5	562,359.0
Louisiana[1]	2,837	7.5	891.5	198.9	170.1	564,284.0
Maine	3,210	10.4	141.9	52.6	51.7	168,954.0
Maryland	3,519	7.5	867.2	216.2	229.7	760,678.0
Massachusetts	3,521	12.4	939.9	243.6	291.0	857,633.0
Michigan	3,495	25.2	1,492.5	402.2	435.8	1,405,647.0
Minnesota	3,537	18.1	469.6	190.5	195.8	673,873.0
Mississippi	3,557	19.7	307.1	114.4	104.6	406,992.0
Missouri	3,499	16.4	607.1	232.8	218.9	814,401.0
Montana	3,773	2.4	80.9	31.6	28.0	119,205.0
Nebraska	3,423	15.6	185.5	71.9	71.4	246,031.0
Nevada	4,840	9.2	225.5	70.8	62.8	342,479.0
New Hampshire	3,429	6.0	138.8	51.0	51.3	175,050.0
New Jersey	4,222	6.4	1,118.8	288.6	330.6	1,218,631.0
New Mexico	4,333	9.3	156.1	59.5	58.1	258,025.0
New York	4,825	16.3	2,307.0	527.0	504.4	2,542,687.0
North Carolina	3,493	15.8	1,086.5	356.1	302.5	1,243,840.0
North Dakota	4,023	4.7	45.6	20.7	18.4	83,090.0
Ohio	3,628	17.0	1,318.3	440.9	449.3	1,599,573.0
Oklahoma	3,238	23.9	368.7	159.7	156.7	516,965.0
Oregon	3,657	18.5	260.4	129.7	125.0	474,131.0
Pennsylvania	3,847	21.2	1,728.4	377.0	351.0	1,450,256.0
Rhode Island	3,694	7.1	105.6	39.5	35.7	145,974.0
South Carolina	3,981	18.0	312.8	143.8	131.4	572,303.0
South Dakota	4,031	6.4	73.4	26.2	25.1	105,585.0
Tennessee	3,444	25.8	894.0	235.2	234.0	810,004.0
Texas	4,389	39.5	2,209.1	757.2	758.3	3,323,435.0
Utah	3,687	20.8	232.6	98.7	93.2	363,754.0
Vermont	3,471	3.5	67.7	22.7	23.4	78,761.0
Virginia	3,450	12.2	638.9	298.9	276.3	1,031,252.0
Washington	4,036	31.4	805.5	207.8	215.3	838,804.0
West Virginia	3,189	5.5	218.8	67.4	59.4	214,984.0

State	Unweighted sample size	Minimum weight	Maximum weight	Mean weight	Median weight	Sum of weights
Wisconsin	3,729	7.4	770.5	205.1	215.5	764,957.0
Wyoming	3,437	3.3	41.9	18.9	17.9	64,970.0

[1]Unweighted sample size excludes children from Louisiana whose interviews were completed in 2005.

Table III. Summary statistics for child-level screener weights by state

State	Unweighted sample size	Minimum weight	Maximum weight	Mean weight	Median weight	Sum of weights
Alabama	5,780	9.7	785.5	189.4	165.1	1,094,785.0
Alaska	7,806	3.5	72.3	24.2	23.3	188,940.0
Arizona	7,864	39.0	547.2	205.5	197.6	1,616,185.0
Arkansas	5,796	18.4	465.7	117.1	100.8	678,722.0
California	11,319	22.2	5,922.1	858.4	721.0	9,715,911.0
Colorado	7,724	23.2	489.5	154.5	134.0	1,193,203.0
Connecticut	6,872	12.9	314.3	121.0	112.3	831,621.0
Delaware	5,589	5.9	119.6	35.3	31.1	197,507.0
District of Columbia	7,009	1.8	58.0	15.9	14.1	111,464.0
Florida	7,672	7.3	2,341.0	534.6	526.2	4,101,802.0
Georgia	7,091	6.5	1,592.8	338.1	292.1	2,397,382.0
Hawaii	8,157	4.1	143.0	36.9	35.5	300,720.0
Idaho	8,383	6.6	124.9	45.4	43.0	380,195.0
Illinois	7,840	16.1	1,994.5	413.8	435.6	3,244,220.0
Indiana	6,683	11.4	1,210.6	239.7	238.9	1,602,073.0
Iowa	7,227	16.1	221.5	92.8	87.1	670,724.0
Kansas	6,638	12.9	347.2	101.6	95.0	674,361.0
Kentucky	6,045	15.5	569.5	162.4	144.7	981,983.0
Louisiana[1]	5,316	4.6	1,111.0	206.7	171.9	1,098,956.0
Maine	5,873	2.4	135.4	47.1	45.3	276,746.0
Maryland	6,495	7.7	1,147.5	215.9	213.7	1,402,563.0
Massachusetts	6,463	8.6	989.7	224.6	257.8	1,451,318.0
Michigan	6,801	9.1	1,407.3	369.3	393.6	2,511,695.0
Minnesota	6,846	16.8	547.5	180.2	180.1	1,233,962.0
Mississippi	6,577	15.4	379.0	113.2	103.1	744,338.0
Missouri	6,560	11.1	762.6	210.2	193.6	1,379,128.0
Montana	7,338	2.1	80.7	28.0	25.4	205,347.0
Nebraska	6,784	11.8	215.0	63.5	61.2	430,792.0
Nevada	9,659	6.4	271.2	65.7	58.1	634,817.0
New Hampshire	6,195	5.2	154.9	49.1	49.6	304,304.0
New Jersey	7,878	5.8	1,258.5	274.0	302.2	2,158,658.0
New Mexico	8,389	6.7	199.6	58.6	54.7	491,780.0
New York	8,847	14.6	2,461.4	510.7	484.1	4,518,097.0
North Carolina	6,315	13.8	1,116.5	343.0	299.5	2,165,951.0
North Dakota	7,749	3.1	60.0	17.5	16.2	135,465.0
Ohio	6,934	14.7	1,405.7	397.3	396.5	2,754,926.0
Oklahoma	6,217	16.9	494.3	137.5	133.0	854,836.0
Oregon	7,052	14.7	269.6	121.6	117.6	857,258.0
Pennsylvania	7,092	17.3	1,839.8	395.6	362.2	2,805,745.0
Rhode Island	6,758	2.6	98.9	36.0	33.4	243,312.0
South Carolina	7,164	14.5	419.7	144.6	134.0	1,035,619.0
South Dakota	8,023	4.8	77.0	23.4	22.7	187,513.0
Tennessee	6,377	23.2	997.1	219.1	212.8	1,397,269.0
Texas	8,531	45.2	2,263.2	752.5	734.0	6,419,671.0
Utah	8,567	16.2	258.5	87.8	84.4	752,229.0
Vermont	6,308	3.3	71.4	21.1	21.1	132,812.0
Virginia	6,259	10.5	911.5	291.9	259.8	1,826,706.0
Washington	7,528	27.1	780.8	198.7	199.2	1,495,806.0
West Virginia	5,704	4.0	216.2	66.8	62.8	381,181.0
Wisconsin	7,206	8.2	692.1	179.8	181.5	1,295,783.0

State	Unweighted sample size	Minimum weight	Maximum weight	Mean weight	Median weight	Sum of weights
Wyoming	6,741	2.2	54.1	16.9	15.7	113,910.0

[1]Unweighted sample size excludes children from Louisiana whose interviews were completed in 2005.

Table IV. Summary statistics for child-level interview weights by state

State	Unweighted sample size	Minimum weight	Maximum weight	Mean weight	Median weight	Sum of weights
Alabama	755	13.8	1,065.8	248.0	196.4	187,262.9
Alaska	739	4.8	120.8	30.3	24.8	22,406.0
Arizona	783	48.2	902.7	257.5	226.7	201,607.6
Arkansas	776	20.0	714.9	154.8	119.6	120,087.1
California	945	32.1	7,036.3	1,020.3	773.7	964,167.1
Colorado	786	34.2	702.9	189.6	147.1	149,000.2
Connecticut	833	28.9	726.8	159.8	120.9	133,073.4
Delaware	749	8.3	197.8	46.1	36.3	34,521.6
District of Columbia	821	2.1	103.5	19.9	15.3	16,368.9
Florida	802	75.8	3,585.5	687.4	603.7	551,263.2
Georgia	793	45.4	2,179.5	421.7	312.7	334,419.9
Hawaii	759	7.9	186.4	47.5	40.1	36,066.1
Idaho	781	13.3	200.2	55.4	48.0	43,306.2
Illinois	804	50.5	3,130.3	561.9	493.0	451,776.2
Indiana	833	25.7	1,584.4	319.9	254.8	266,493.9
Iowa	797	16.9	458.9	119.3	96.4	95,093.9
Kansas	797	26.3	597.0	135.5	110.1	108,023.8
Kentucky	809	33.5	1,028.4	224.0	172.0	181,201.8
Louisiana[1]	651	8.8	1,463.0	249.0	188.7	162,116.3
Maine	802	5.4	239.7	61.0	55.5	48,890.6
Maryland	792	7.7	1,309.3	274.0	227.3	216,984.2
Massachusetts	790	12.3	1,309.3	301.1	279.4	237,838.2
Michigan	819	35.0	1,896.2	472.5	414.6	387,007.6
Minnesota	766	31.7	809.1	231.9	194.8	177,668.1
Mississippi	762	22.9	669.6	146.8	119.1	111,852.2
Missouri	860	52.8	1,063.9	259.4	209.0	223,069.6
Montana	794	2.9	141.7	35.1	27.5	27,853.4
Nebraska	772	15.0	336.9	81.3	69.3	62,758.7
Nevada	751	14.9	378.6	87.7	78.4	65,900.0
New Hampshire	824	8.1	196.6	61.1	51.3	50,364.6
New Jersey	809	9.0	2,172.7	354.5	331.1	286,826.0
New Mexico	858	10.2	267.4	69.4	60.3	59,535.5
New York	851	51.3	2,959.4	672.7	585.0	572,503.5
North Carolina	770	95.9	1,811.5	433.6	336.2	333,895.2
North Dakota	764	3.8	83.2	21.7	18.7	16,540.9
Ohio	821	29.7	2,136.3	542.3	451.0	445,205.0
Oklahoma	802	19.4	654.0	176.0	148.9	141,129.3
Oregon	765	31.5	495.6	152.9	125.7	116,988.3
Pennsylvania	863	23.0	2,430.3	499.0	395.2	430,640.0
Rhode Island	850	3.9	219.1	49.2	38.8	41,782.5
South Carolina	849	20.6	746.3	185.9	149.7	157,801.5
South Dakota	790	6.1	115.6	29.9	26.7	23,644.1
Tennessee	794	29.1	1,372.4	289.4	245.3	229,744.3
Texas	845	133.0	4,113.4	954.7	795.0	806,746.0
Utah	758	20.3	368.5	108.8	94.3	82,502.5
Vermont	771	4.1	105.1	25.9	23.8	19,936.8
Virginia	791	11.5	1,508.8	365.6	288.9	289,176.4
Washington	826	59.3	1,066.8	259.8	224.2	214,582.8
West Virginia	785	10.0	353.1	88.6	71.0	69,567.0
Wisconsin	833	32.0	915.0	237.4	198.2	197,791.1

State	Unweighted sample size	Minimum weight	Maximum weight	Mean weight	Median weight	Sum of weights
Wyoming	783	2.6	76.0	21.0	17.7	16,456.2

[1]Unweighted sample size excludes children from Louisiana whose interviews were completed in 2005.

Appendix III

Computing Sampling Weights for Referent Sample

This appendix summarizes the methodology used to weight the 2005-06 National Survey of CSHCN referent sample. For the referent sample, only a single set of child-level weights was computed. The weighting procedures for the referent sample involved the following steps:

1. Base sampling weight,
2. Adjustment for nonresolution (working-residential-number status is never determined) of released telephone numbers,
3. Adjustment for incomplete age-eligibility screener,
4. Adjustment for incomplete CSHCN screener,
5. Raking/poststratification adjustment of household weights,
6. Adjustment for subsampling of children in households with more than one child.
7. Adjustment for nonresponse to child-level interview,
8. Adjustment for multiple telephone lines,
9. Raking adjustment of the nonresponse-adjusted child interview weights

Since the referent sample weighting procedures are very similar to those of the main sample, the details of each step are not presented here. Instead, the differences between the two weighting schemes are discussed.

The first four weighting steps for the referent sample are the same as the first four steps of the weighting procedures for the main sample. In step 1, the base weight is derived by using the size of the referent sample in each quarter in each estimation area. In steps 2 to 4, the adjustment cells are formed at a broader level given the smaller size of the referent sample. A poststratification adjustment of household weights (step 5) is done using the population counts of household totals for each state obtained from the Census population estimate.

The base weight of all children in a household in the referent sample is equal to the household weight. Since the subsampling of one child is made in households with more than one child, the weight of the subsampled children is adjusted by multiplying the total number of age-eligible children in the household (step 6). This adjustment is the same as the adjustment for subsampling of the children with special care needs. The only difference is that, for the referent sample, the total number of children is used instead of the number of CSHCN.

Since not all children subsampled for the referent sample will have completed interviews, an interview nonresponse adjustment is made to the weights of the children with interviews (step 7). This adjustment is the same as the weighting procedure for the main sample where adjustment for the nonresponse to the special-needs interview is made. However, the nonresponse adjustment cells are different for the referent sample.

The adjustment for the multiple telephone lines (step 8) is the same as that of the main sample. However, the adjustment for multiple telephone lines for the referent sample is made after adjusting for the nonresponse to the child-level interview because the information on multiple telephone lines is available only for households that complete the child-level interview.

The final step to produce the child weight for the referent sample is the raking adjustment of the nonresponse-adjusted weights (step 9). This raking adjustment is similar to Step 7 of the

weighting scheme for the main sample. The nonresponse-adjusted child weights were further adjusted such that the sum of the weights agrees with the control totals in various categories. The raking adjustment categories of the margins used in Step 7 of the main sample weighting scheme are used here except that the raking is applied at the national census region level instead of the state level. The categories of the margins are as follows:

- Number of male and female children in four age groups: 0-4 years, 5-9 years, 10-14 years, and 15-17 years.
- Number of children of various race and ethnic backgrounds.
- Number of children residing in each census division.
- Number of children in households with one child, households with two children, and households with three or more children.
- Number of children in households that have a household income in each of five nonoverlapping categories.
- Number of children in households where the highest reported educational attainment is less than a high school education, high school, or more than high school.
- Number of children in households without an interruption in telephone service and number of children in households with an interruption in telephone service for at least 1 week during the past 12 months plus number of children in nontelephone households.

At this stage, the weights are checked and all extreme weights are trimmed to avoid any undue influence on the variances of the estimates. Any weight greater than the median plus six times the interquartile range of the weights within a given census division is identified as an extreme weight and truncated to this cutoff value. The raking adjustment is rerun after truncating the extreme weights. In fact, the process of truncation and raking adjustment is repeated a few times to ensure that no weight is greater than the trimming cutoff value within a census division.

This raking-adjusted weight is the final child interview weight that is used to produce estimates from the referent sample. This weight is created for all children in the referent sample, irrespective of special-needs status. Referent interview weighting detail by reported stratum appears in table V. For children without special health care needs, this referent interview weight appears on the publicly released Referent File, denoted by WEIGHT_RI.

Table V. Summary statistics for referent interview weights by strata

Stratum (census region)	Unweighted sample size	Minimum weight	Maximum weight	Mean weight	Median weight	Sum of weights
11 (Northeast)	541	539.1	60,738.7	9,375.3	7,366.0	5,072,027.6
12 (Northeast)	151	1,560.4	36,906.0	11,642.1	10,564.3	1,757,948.9
13 (Northeast)	427	1,586.8	50,010.7	13,737.1	11,629.0	5,865,732.9
21 (Midwest)	210	1,764.5	42,514.5	8,584.8	7,853.2	1,802,799.7
22 (Midwest)	508	1,433.8	51,439.7	10,896.3	9,626.7	5,535,311.1
23 (Midwest)	442	1,918.9	50,201.9	12,015.0	10,441.5	5,310,637.7
24 (Midwest)	273	1,539.8	46,364.0	12,797.3	11,609.6	3,493,663.8
31 (South)	344	1,928.9	65,890.7	10,225.6	8,784.8	3,517,596.8
32 (South)	817	734.1	58,541.6	11,649.7	9,588.7	9,517,811.1
33 (South)	568	500.9	65,909.7	12,894.1	10,897.3	7,323,864.2
34 (South)	392	2,896.6	65,796.6	16,675.0	13,683.6	6,536,596.2
41 (West)	900	229.5	79,158.2	11,517.5	8,386.9	10,365,767.4
42 (West)	411	1,172.2	78,994.3	13,258.2	10,153.4	5,449,134.0
43 (West)	116	2,750.4	78,941.9	18,374.1	14,846.8	2,131,399.6

NOTE: Unweighted sample sizes include children with and without special health care needs and exclude children from Louisiana whose interviews were completed in 2005.

Appendix IV

Questionnaire

The questionnaire for the 2005-06 National Survey of CSHCN (including question wording, response options, and instructions for skipping questions) will be added when this report is published in 2008. Until such time, this questionnaire may be found on the SLAITS website (http://www.cdc.gov/nchs/slaits.htm).

Appendix V

Summary of Key Differences between the 2001 and 2005-06 Questionnaires

Section 2

For 2005-06, the CSHCN Screener questions were rearranged so that the question about chronic use of prescription medications (CSHCN1) preceded the question about elevated service use (CSHCN2). A pretest for the 2001 survey suggested that this change may result in lower observed prevalence of elevated service use, but no change in prevalence of prescription medication need or in overall CSHCN prevalence (2).

For 2005-06, a new question about the primary language spoken in the home was added (C2Q05).

Section 3

Other than the extent to which the child's health impacts his or her functioning, the 2001 survey did not provide any details about the functional impairments. The 2005-06 survey included a new section on health conditions and functioning among CSHCN (S3Q01 – S3Q31_A).

The wording and response options for question C3Q10 in this section changed substantially from 2001 even though the survey item number remained the same. For 2005-06, question C3Q10 asked respondents to rate the severity of functional difficulties caused by the child's health problems rather than the severity of the child's health problems. Moreover, for 2005-06, this question was asked only if the respondent reported a functional difficulty.

For 2005-06, a new question about the number of emergency room visits during the past 12 months was added (C6Q00).

Section 4

The 2001 survey asked only for the type of place that the child usually goes for preventive care. If the child had no such place, the respondent had to volunteer this info in 2001. A new question was added (C4Q0D) for 2005-06 to ask specifically if such a place exists.

The 2001 survey asked if the child had a personal doctor or nurse. A respondent may have reported "no" if the child had more than one personal doctor or nurse. For 2005-06, the question was modified to permit reporting of more than one personal doctor or nurse (C4Q02A).

For 2005-06, new questions were added to determine if children with unmet needs for particular services received any of that type of service during the previous 12 months. This change permits unmet need to be divided into "some need met" and "no need met." This change will also permit estimates of services used by CSHCN.

For 2005-06, a new question was added to ascertain the number of specialty doctors seen by the child during the past 12 months (C4Q05X02AA).

The 2001 survey did not permit estimates of the extent to which CSHCN receive preventive dental care. For 2005-06, questions about dental care were modified to ask separately about preventive dental care and any other dental care (C5Q05_X031, C5Q05_X032).

For 2005-06, "other medical equipment" was modified to "durable medical equipment" (C4Q05_X14).

In 2001, interviewers read a definition of respite care ("having someone care for your child so that you and family members can do other things") when asking about need for such care (C4Q06_X01). For 2005-6, the definition of respite care was available to interviewers if necessary, but they were not required to read it to respondents.

An error in the 2001 survey was fixed to ask the early intervention services question (C3Q12) for 2-year-old sampled children.

Section 5

The 2001 survey asked only if there were problems getting referrals to specialists. If the child did not need referrals or did not need specialty case, respondents may have reported no problems. For 2005-06, the question was modified to refer to referrals for any doctors or any services, and a new question was added to determine if referrals were necessary (C5Q11, C4Q07).

Professional care coordination questions from 2001 were dropped. New questions were added for 2005-06 to determine whether the respondent received any help at all with care coordination (C5Q12) and whether the respondent felt that any extra help arranging or coordinating care would have been useful (C5Q17, C5Q09). New skip patterns were added so that children with only one type of service need in the past year were not asked care coordination questions (C5Q12). Whether coordinators are professional can be determined from new questions asking who provides help arranging or coordinating care (C5Q13 – C5Q16).

In 2001, respondents were asked to judge the quality of doctors' communication. For 2005-06, the question was modified to ask about satisfaction with communication and its question number was changed (from C5Q05 to C5Q10).

In 2001, respondents were asked to judge the quality of doctors' communication with other programs. For 2005-06, the question was modified to ask about satisfaction with communication (C5Q06). Also, a new question was added to determine if such communication was needed (C5Q05).

Section 6

New questions were added for 2005-06 to determine if interpreters were needed (S5Q13) and if respondents usually or always had an interpreter available to help them speak with doctors (S5Q13A).

All but one of the questions about transition from 2001 were dropped. The question about discussion of a shift to adult providers was retained (C6Q0A_B), but a new question was added for 2005-06 to determine if a shift would be necessary (C6Q07). New questions were added about whether doctors discussed health care needs (C6Q0A) and insurance issues (C6Q0A_E) as child becomes an adult. New follow-up questions were added to determine if discussions that did not occur would have been helpful (C6Q0A_C, C6Q0A_D, C6Q0A_F). Finally, a question was added to determine if doctors encourage the child to take responsibility for his or her own health care needs (C6Q08). In 2001, transition questions were asked for children 13-17 years of age. For 2005-06, the questions were asked for children 12-17 years of

age, except for the "take responsibility" question, which was asked for children 5-17 years of age.

In 2001, respondents were asked to judge the organization of community-based services, and no examples of the services were provided. For 2005-06, the question was modified to ask if respondents had any difficulties trying to use community-based services and examples of such services were provided (C6Q0D). In addition, for 2005-06, new questions were added to identify the reasons why respondents had difficulty trying to use these services (C6Q0E).

For 2005-06, there was no change to the wording of the question about satisfaction with services received (C6Q0C), but it was moved after questions on family centered care and ease of service use. Therefore, for 2005-06, it is possible that the satisfaction question may have been interpreted by respondents as referring to satisfaction with community-based services only.

Section 7

The question text was modified for 2006 to ask about employer/union insurance separately from private insurance purchased directly (C7Q03, C7Q08C).

States have flexibility in implementing the State Children's Health Insurance Program (SCHIP). Thirteen states implemented the program by only expanding their Medicaid program. (See appendix VIII). In 2001, respondents living in these states were asked about SCHIP coverage only if the Medicaid expansion program had been given a name that differed from the Medicaid program in that state. For 2005-06, respondents living in these states were not asked separate questions about Medicaid and SCHIP. Rather, a single question (C7Q04) about both Medicaid and SCHIP was asked.

Nine states implemented a separate SCHIP program but used the same (or substantially similar) name for both the SCHIP program and the Medicaid program. One state (Tennessee) did not have an SCHIP program in 2005-06. In 2001, respondents living in these states were not asked any questions about SCHIP. For 2005-06, respondentsliving in these states were asked a single question (C7Q04) about both Medicaid and SCHIP.

Section 8

For 2005-06, a response option of "no out of pocket costs" was added to the question which asks if charges not covered by child's insurance were reasonable (C8Q01_B). This response was not an option in 2001.

Section 9

For 2005-06, the directions for the question about medical expenses (C9Q01) were modified to include co-payments, dental care costs, and vision care costs among the types of payments to be included.

For 2005-06, "providing transportation to appointments" was dropped from the list of activities to include as providing care (C9Q02).

For 2005-06, the question about reducing work hours (C9Q06) was modified to ask about reducing hours "because of the child's health conditions." In 2001, the reason for reducing work hours was less specific ("to care for the child").

For 2005-06, the questions about employment of family members were rearranged so that the question on stopping work (C9Q10) preceded the question on reducing work hours (C9Q06). In addition, if a family member had stopped work, the introduction to the question on reducing work hours was modified to ask only about family members who had not completely stopped work.

Section 10

No information on family structure was obtained in 2001. For 2005-06, a new set of questions was added to identify the structure of the child's family (two-parent biological/adoptive family, two-parent family with at least one step-parent, one-parent household with no father, other). These questions also permit identification of adopted children, the age at adoption, and whether the child was adopted from the domestic foster care system or from another country.

Appendix VI

Summary of Questionnaire Changes During Data Collection

On July 6, 2005, changes were made to the following questions:

- The following sentence was added to the end of SELECTION1: "The computer randomly chose this child for the interview, and we will not be asking questions about any other child from this point forward."
- C4Q04_A was changed from "There are many reasons people delay or do not get needed health care. Did you delay or not get health care for (S.C.) because you couldn't get through to the health care provider's office on the telephone?" to "There are many reasons people delay or do not get needed health care. I am going to read a list of reasons. For each, please tell me—yes or no—if this was a reason you delayed or did not get needed health care. Did you delay or not get health care for (S.C.) because you couldn't get through to the health care provider's office on the telephone?"
- A preface to C10Q03 was added: "The next questions will help us better understand the health needs of adopted children."
- Interviewer instructions to read the first phrase of the cascading income questions were modified to make the first phrase optional. Questions W9Q06, W9Q06A, W9Q06B, W9Q06C, W9Q07, W9Q07A, W9Q07B, and W9Q08 were modified from "Was the total combined household income more or less than $(dollar amount)?" to simply "More or less than $(dollar amount)?"
- A new response option was added to ISC200: "(33) There is no one person who knows about all the children in the household."

On October 5, 2005, the following changes were made:

- The words "the most" were removed from ISC200, which is the question that asked for the parent or guardian most knowledgeable about the child's health to be the respondent. The words "the most" were removed to allow any parent or guardian in the household who was knowledgeable about the child's health to participate in the interview.
- In the main sample, the sentence "These questions take between 5 and 25 minutes, but for most families, it's around 10 minutes." in SL_INTRO and INTRO3B was replaced with "After a few questions, I can tell you the length of the rest of the interview." In addition, the following sentence was added to C2START1: "The rest of the survey will take about (5 minutes/25 minutes)." The estimated length of interview statement was originally included before the CSHCN Screener for the main sample. Because of the large number of households that broke off the interview at this location, and in the interest of being able to provide accurate information about the length of the interview to respondents once they completed the screener (i.e., longer for households with CSHCN, shorter for those without CSHCN), the timing estimate was moved after the screener. Once the special needs status of the household had been determined, the appropriate time estimate was given and the interview continued.

- The following sentence was added to C11Q20: “Do not include interruptions of phone service due to weather or natural disasters.”
- All date of birth questions were revised to only ask for child’s age. Originally, households were asked to provide dates of birth for all rostered children. While households who refused to provide a date of birth were then asked to simply report the child’s age, a number of households broke off after being asked date of birth and never heard the less sensitive question. Because the date of birth information was not necessary to continue the interview, all date of birth questions were removed from the screening section, and households were asked instead to report ages of rostered children.

On January 5, 2006, the following changes were made:

- The following sentence was added to the end of SELECTION: "The computer randomly chose this child for the interview, and we will not be asking questions about any other child from this point forward."
- In the referent sample, the sentence “The questions take between 15 and 25 minutes.” in SL_INTRO and INTRO3B was replaced with “After a few questions, I can tell you the length of the rest of the interview.” In addition, the following sentence was added to C2START1: “The rest of the survey will take about 25 minutes.” The location of the time estimate statement was changed in the referent sample to be consistent with the new placement of the time estimate in the main sample as described above. While the time estimate for the referent sample households did not vary significantly by special needs status, employing a consistent methodology across samples was important.
- The Hurricane Evacuees section was added to the interview as the fourth subsection in Section 6. This section asked about the effect of the 2005 Hurricanes Katrina and Rita on the ability of the child to receive health care. (See appendix IX for more information.) Respondents were first asked whether the child was displaced for even one night due to the hurricanes. If yes, they were asked a series of questions about any special arrangements that may have been needed and how long the child was away from home due to the hurricanes. If the child had not been displaced, the interviewer skipped to the next section of the interview.
- Questions C7Q10, C7Q11, and C7Q13 in the insurance section were modified to accommodate the addition of the Health Insurance Module (HIM) to the NIS. If health insurance questions were asked during the NIS, they were not asked again in the National Survey of CSHCN. However, these three questions did not perfectly match questions from the HIM. Therefore, introductory statements were added to acknowledge the respondents’ previous answers before repeating questions that may have sounded redundant.

On February 23, 2006, the following changes were made:

- Two new questions about state of residence (LOC_CONF and LOC_STATE) were added to the end of section 11. These questions were asked if the state associated with the reported ZIP code was different from the state associated with the ZIP code for the sampled telephone number. These new questions asked respondents to confirm the state in which they lived.

- Two open-ended questions were added to the Hurricane Evacuees section: K2A and K3A.

On April 6, 2006, question C11Q22_CONF was added to the end of section 11.

On May 26, 2006, the Influenza Vaccination module was added to the main sample interview. These questions were removed on August 23, 2006.

On July 6, 2006, the following changes were made:

- The text of C11Q14 was changed from "The next few questions are about the telephone numbers in your household. Do you have any other home phone numbers in addition to {area code and telephone number called}? Please do not include cellular phones in your answer." to "Do you have more than one telephone number in your household? Do not include cell phones or numbers that are only used by a computer or fax machine."
- Questions C11Q15 ("Is this second number for home use only, for business use only, or for both home and business use?") and C11Q16 ("Is this second number used only for computer or fax communications?") were removed, and replaced by C11Q14_A: "How many telephone numbers are residential numbers?" It included an interviewer instruction: "This question is asking for the total number of home telephone numbers (including the number we called)."

Appendix VII

Procedures to Assign Household Poverty Status

The Department of Health and Human Services (DHHS) publishes Federal Poverty Guidelines for the determination of household poverty status (http://aspe.hhs.gov/poverty). These guidelines are produced annually and developed separately for the 48 contiguous states (plus DC), Alaska, and Hawaii.

The 2005-06 National Survey of CSHCN used DHHS guidelines to assign household poverty status. Year 2005 guidelines (tables VI-VIII) were used with 2004 income for interviews conducted from April 5, 2005 through December 31, 2005 and with 2005 income from January 1, 2006 through February 22, 2006, with one exception: Year 2005 guidelines were used with 2004 income for all interviews with NIS age-eligible households that were first contacted in Quarter 4, 2005, regardless of whether the interview was completed in 2005 or 2006. Year 2006 guidelines (tables IX-XI) were used with 2005 income for interviews conducted from February 23, 2006 through December 31, 2005 and with 2006 income for interviews conducted from January 1, 2007 through February 5, 2007.

The tables were used to group households into the following poverty status categories:

- Category AA – Below 50% of poverty
- Category A –50% of poverty or greater, but below 100% of poverty
- Category B –100% of poverty or greater, but below 133% of poverty
- Category C –133% of poverty or greater, but below 150% of poverty
- Category D –150% of poverty or greater, but below 185% of poverty
- Category E –185% of poverty or greater, but below 200% of poverty
- Category F –200% of poverty or greater, but below 300% of poverty
- Category G –300% of poverty or greater, but below 400% of poverty
- Category H –400% of poverty or greater

Two variables were used to determine household poverty status: the number of people residing in a household and the total household income during the prior calendar year. It was possible for income data to be gathered using one of three different methods. A respondent could provide an exact income, provide an income range based on a closed-ended series of questions, or provide an income range using a set of cascade questions revised to allow exact determination of household poverty status in cases where that would not otherwise be possible. A brief description of each method and the household poverty status assignment process appears below.

Respondent Reported Exact Income – When a respondent reported an exact income, poverty status was assigned by simply comparing the number of household members and the exact income reported with the appropriate guidelines table.

Respondent Reported Income Range Based on a Closed-Ended Series of Questions – When respondents did not supply a specific dollar amount for household income, it was necessary to ask a series of questions on whether the total household income was below, exactly at, or above threshold amounts. A matrix was then created to categorize these responses. Each cell in the matrix was assigned to one of the following income categories:

- Less than $7,500
- $7,500 to $9,999
- $10,000 to $12,499
- $12,500 to $14,999
- $15,000 to $17,499
- $17,500 to $19,999
- $20,000 to $24,999
- $25,000 to $29,999
- $30,000 to $34,999
- $35,000 to $39,999
- $40,000 to $44,999
- $45,000 to $49,999
- $50,000 to $59,999
- $60,000 to $74,999
- $75,000 or higher

Respondents who went through the cascade of income questions were assigned a household poverty status by comparing the number of household members and the assigned income category with the appropriate guidelines table. For example, a respondent living in Alaska reporting a household size of 2 persons and an income (based on the cascade) of $35,000-$39,999 would be classified into category F (200% of poverty or greater, but less than 300% of poverty) based on the 2005 guidelines in Table VII. A respondent living in the 48 contiguous states reporting a household size of 3 persons and an income of $75,000 or higher would be classified into category H (400% of poverty or greater) based on the 2006 guidelines in Table IX. When respondents did not complete the income cascade, either because they refused or did not know the answer to one of the cascade questions, household poverty status could not be assigned.

Respondent Reported Income Range Based on Revised Series of Cascade Questions – In some cases, the income categories described above encompassed one or more income breaks for determining household poverty status. In such cases, additional income cascade questions beyond the standard set were asked to permit definitive assignment of poverty status. For these questions, "customized" income "reference" values, based on household size and state of residence, were used to obtain a range that would fit into the poverty-level table. For example, the income break indicating that a two-person household in the contiguous 48 states was below 50% of poverty (using the 2005 guidelines) was $6,415. This income break is encompassed in the income category of "< $7,500." Therefore, for respondents who went through the cascade and reported income less than $7,500, an additional cascade question asked whether the household income was above, at, or below $6,400 (based on rounding rules described in the notes to the poverty guideline tables). If the household reported an income below $6,400, the assigned household poverty status would be Category AA (below 50% of poverty).

Using DHHS guidelines, tables were developed to provide reference values for the additional income cascade questions. Reference values using 2005 guidelines are presented in tables XII-XIV. Reference values using 2006 guidelines are presented in tables XV-XVII.

Table VI. Year 2005 guidelines for poverty ranges based on total family members for families in the 48 contiguous states and the District of Columbia

	Percent of Federal poverty level							
Family size	50	100	133	150	185	200	300	400
2	$6,415	$12,830	$17,064	$19,245	$23,736	$25,660	$38,490	$51,320
3	$8,045	$16,090	$21,400	$24,135	$29,767	$32,180	$48,270	$64,360
4	$9,675	$19,350	$25,736	$29,025	$35,798	$38,700	$58,050	$77,400
5	$11,305	$22,610	$30,071	$33,915	$41,829	$45,220	$67,830	$90,440
6	$12,935	$25,870	$34,407	$38,805	$47,860	$51,740	$77,610	$103,480
7	$14,565	$29,130	$38,743	$43,695	$53,891	$58,260	$87,390	$116,520
8	$16,195	$32,390	$43,079	$48,585	$59,922	$64,780	$97,170	$129,560
9	$17,825	$35,650	$47,415	$53,475	$65,953	$71,300	$106,950	$142,600
10	$19,455	$38,910	$51,750	$58,365	$71,984	$77,820	$116,730	$155,640
11	$21,085	$42,170	$56,086	$63,255	$78,015	$84,340	$126,510	$168,680
12	$22,715	$45,430	$60,422	$68,145	$84,046	$90,860	$136,290	$181,720
13	$24,345	$48,690	$64,758	$73,035	$90,077	$97,380	$146,070	$194,760
14	$25,975	$51,950	$69,094	$77,925	$96,108	$103,900	$155,850	$207,800
15	$27,605	$55,210	$73,429	$82,815	$102,139	$110,420	$165,630	$220,840
16	$29,235	$58,470	$77,765	$87,705	$108,170	$116,940	$175,410	$233,880
17	$30,865	$61,730	$82,101	$92,595	$114,201	$123,460	$185,190	$246,920
18	$32,495	$64,990	$86,437	$97,485	$120,232	$129,980	$194,970	$259,960

Table VII. Year 2005 guidelines for poverty ranges based on total family members for families in Alaska

	Percent of Federal poverty level							
Family size	50	100	133	150	185	200	300	400
2	$8,015	$16,030	$21,320	$24,045	$29,656	$32,060	$48,090	$64,120
3	$10,055	$20,110	$26,746	$30,165	$37,204	$40,220	$60,330	$80,440
4	$12,095	$24,190	$32,173	$36,285	$44,752	$48,380	$72,570	$96,760
5	$14,135	$28,270	$37,599	$42,405	$52,300	$56,540	$84,810	$113,080
6	$16,175	$32,350	$43,026	$48,525	$59,848	$64,700	$97,050	$129,400
7	$18,215	$36,430	$48,452	$54,645	$67,396	$72,860	$109,290	$145,720
8	$20,255	$40,510	$53,878	$60,765	$74,944	$81,020	$121,530	$162,040
9	$22,295	$44,590	$59,305	$66,885	$82,492	$89,180	$133,770	$178,360
10	$24,335	$48,670	$64,731	$73,005	$90,040	$97,340	$146,010	$194,680
11	$26,375	$52,750	$70,158	$79,125	$97,588	$105,500	$158,250	$211,000
12	$28,415	$56,830	$75,584	$85,245	$105,136	$113,660	$170,490	$227,320
13	$30,455	$60,910	$81,010	$91,365	$112,684	$121,820	$182,730	$243,640
14	$32,495	$64,990	$86,437	$97,485	$120,232	$129,980	$194,970	$259,960
15	$34,535	$69,070	$91,863	$103,605	$127,780	$138,140	$207,210	$276,280
16	$36,575	$73,150	$97,290	$109,725	$135,328	$146,300	$219,450	$292,600
17	$38,615	$77,230	$102,716	$115,845	$142,876	$154,460	$231,690	$308,920
18	$40,655	$81,310	$108,142	$121,965	$150,424	$162,620	$243,930	$325,240

Table VIII. Year 2005 guidelines for poverty ranges based on total family members for families in Hawaii

	Percent of Federal poverty level							
Family size	50	100	133	150	185	200	300	400
2	$7,380	$14,760	$19,631	$22,140	$27,306	$29,520	$44,280	$59,040
3	$9,255	$18,510	$24,618	$27,765	$34,244	$37,020	$55,530	$74,040
4	$11,130	$22,260	$29,606	$33,390	$41,181	$44,520	$66,780	$89,040
5	$13,005	$26,010	$34,593	$39,015	$48,119	$52,020	$78,030	$104,040
6	$14,880	$29,760	$39,581	$44,640	$55,056	$59,520	$89,280	$119,040
7	$16,755	$33,510	$44,568	$50,265	$61,994	$67,020	$100,530	$134,040
8	$18,630	$37,260	$49,556	$55,890	$68,931	$74,520	$111,780	$149,040
9	$20,505	$41,010	$54,543	$61,515	$75,869	$82,020	$123,030	$164,040
10	$22,380	$44,760	$59,531	$67,140	$82,806	$89,520	$134,280	$179,040
11	$24,255	$48,510	$64,518	$72,765	$89,744	$97,020	$145,530	$194,040
12	$26,130	$52,260	$69,506	$78,390	$96,681	$104,520	$156,780	$209,040
13	$28,005	$56,010	$74,493	$84,015	$103,619	$112,020	$168,030	$224,040
14	$29,880	$59,760	$79,481	$89,640	$110,556	$119,520	$179,280	$239,040
15	$31,755	$63,510	$84,468	$95,265	$117,494	$127,020	$190,530	$254,040
16	$33,630	$67,260	$89,456	$100,890	$124,431	$134,520	$201,780	$269,040
17	$35,505	$71,010	$94,443	$106,515	$131,369	$142,020	$213,030	$284,040
18	$37,380	$74,760	$99,431	$112,140	$138,306	$149,520	$224,280	$299,040

Table IX. Year 2006 guidelines for poverty ranges based on total family members for families in the 48 contiguous states and the District of Columbia

	Percent of Federal poverty level							
Family size	50	100	133	150	185	200	300	400
2	$6,600	$13,200	$17,556	$19,800	$24,420	$26,400	$39,600	$52,800
3	$8,300	$16,600	$22,078	$24,900	$30,710	$33,200	$49,800	$66,400
4	$10,000	$20,000	$26,600	$30,000	$37,000	$40,000	$60,000	$80,000
5	$11,700	$23,400	$31,122	$35,100	$43,290	$46,800	$70,200	$93,600
6	$13,400	$26,800	$35,644	$40,200	$49,580	$53,600	$80,400	$107,200
7	$15,100	$30,200	$40,166	$45,300	$55,870	$60,400	$90,600	$120,800
8	$16,800	$33,600	$44,688	$50,400	$62,160	$67,200	$100,800	$134,400
9	$18,500	$37,000	$49,210	$55,500	$68,450	$74,000	$111,000	$148,000
10	$20,200	$40,400	$53,732	$60,600	$74,740	$80,800	$121,200	$161,600
11	$21,900	$43,800	$58,254	$65,700	$81,030	$87,600	$131,400	$175,200
12	$23,600	$47,200	$62,776	$70,800	$87,320	$94,400	$141,600	$188,800
13	$25,300	$50,600	$67,298	$75,900	$93,610	$101,200	$151,800	$202,400
14	$27,000	$54,000	$71,820	$81,000	$99,900	$108,000	$162,000	$216,000
15	$28,700	$57,400	$76,342	$86,100	$106,190	$114,800	$172,200	$229,600
16	$30,400	$60,800	$80,864	$91,200	$112,480	$121,600	$182,400	$243,200
17	$32,100	$64,200	$85,386	$96,300	$118,770	$128,400	$192,600	$256,800
18	$33,800	$67,600	$89,908	$101,400	$125,060	$135,200	$202,800	$270,400

Table X. Year 2006 guidelines for poverty ranges based on total family members for families in Alaska

	Percent of Federal poverty level							
Family size	50	100	133	150	185	200	300	400
2	$8,250	$16,500	$21,945	$24,750	$30,525	$33,000	$49,500	$66,000
3	$10,375	$20,750	$27,598	$31,125	$38,388	$41,500	$62,250	$83,000
4	$12,500	$25,000	$33,250	$37,500	$46,250	$50,000	$75,000	$100,000
5	$14,625	$29,250	$38,903	$43,875	$54,113	$58,500	$87,750	$117,000
6	$16,750	$33,500	$44,555	$50,250	$61,975	$67,000	$100,500	$134,000
7	$18,875	$37,750	$50,208	$56,625	$69,838	$75,500	$113,250	$151,000
8	$21,000	$42,000	$55,860	$63,000	$77,700	$84,000	$126,000	$168,000
9	$23,125	$46,250	$61,513	$69,375	$85,563	$92,500	$138,750	$185,000
10	$25,250	$50,500	$67,165	$75,750	$93,425	$101,000	$151,500	$202,000
11	$27,375	$54,750	$72,818	$82,125	$101,288	$109,500	$164,250	$219,000
12	$29,500	$59,000	$78,470	$88,500	$109,150	$118,000	$177,000	$236,000
13	$31,625	$63,250	$84,123	$94,875	$117,013	$126,500	$189,750	$253,000
14	$33,750	$67,500	$89,775	$101,250	$124,875	$135,000	$202,500	$270,000
15	$35,875	$71,750	$95,428	$107,625	$132,738	$143,500	$215,250	$287,000
16	$38,000	$76,000	$101,080	$114,000	$140,600	$152,000	$228,000	$304,000
17	$40,125	$80,250	$106,733	$120,375	$148,463	$160,500	$240,750	$321,000
18	$42,250	$84,500	$112,385	$126,750	$156,325	$169,000	$253,500	$338,000

Table XI. Year 2006 guidelines for poverty ranges based on total family members for families in Hawaii

	Percent of Federal poverty level							
Family size	50	100	133	150	185	200	300	400
2	$7,590	$15,180	$20,189	$22,770	$28,083	$30,360	$45,540	$60,720
3	$9,545	$19,090	$25,390	$28,635	$35,317	$38,180	$57,270	$76,360
4	$11,500	$23,000	$30,590	$34,500	$42,550	$46,000	$69,000	$92,000
5	$13,455	$26,910	$35,790	$40,365	$49,784	$53,820	$80,730	$107,640
6	$15,410	$30,820	$40,991	$46,230	$57,017	$61,640	$92,460	$123,280
7	$17,365	$34,730	$46,191	$52,095	$64,251	$69,460	$104,190	$138,920
8	$19,320	$38,640	$51,391	$57,960	$71,484	$77,280	$115,920	$154,560
9	$21,275	$42,550	$56,592	$63,825	$78,718	$85,100	$127,650	$170,200
10	$23,230	$46,460	$61,792	$69,690	$85,951	$92,920	$139,380	$185,840
11	$25,185	$50,370	$66,992	$75,555	$93,185	$100,740	$151,110	$201,480
12	$27,140	$54,280	$72,192	$81,420	$100,418	$108,560	$162,840	$217,120
13	$29,095	$58,190	$77,393	$87,285	$107,652	$116,380	$174,570	$232,760
14	$31,050	$62,100	$82,593	$93,150	$114,885	$124,200	$186,300	$248,400
15	$33,005	$66,010	$87,793	$99,015	$122,119	$132,020	$198,030	$264,040
16	$34,960	$69,920	$92,994	$104,880	$129,352	$139,840	$209,760	$279,680
17	$36,915	$73,830	$98,194	$110,745	$136,586	$147,660	$221,490	$295,320
18	$38,870	$77,740	$103,394	$116,610	$143,819	$155,480	$233,220	$310,960

Table XII. Year 2005 reference value table for additional income cascade questions for households in the 48 contiguous States and District of Columbia

Household size	Reported range of total household income														
	Less than $7,500	$7,500-$9,999	$10,000-$12,499	$12,500-$14,999	$15,000-$17,499	$17,500-$19,999	$20,000-24,999	$25,000-$29,999	$30,000-$34,999	$35,000-$39,999	$40,000-$44,999	$45,000-$49,999	$50,000-$59,999	$60,000-$74,999	$75,000 and over
2	$6,400	A	A	B	B	$19,200	$23,700	F	F	$38,500	G	G	$51,300	H	H
3	AA	$8,000	A	A	$16,100	B	$21,400	D	$32,200	F	F	$48,300	G	$64,400	H
4	AA	AA	A	A	A	$19,400	B	$29,000	D	$38,700	F	F	$58,100	G	H
5	AA	AA	$11,300	A	A	A	$22,600	B	$33,900	D	$41,800	F	F	$67,800	$90,000
6	AA	AA	AA	A	A	A	A	B	B	$38,800	D	$47,900	$51,700	F	$80,000/ $105,000
7	AA	AA	AA	AA	A	A	A	A	B	$38,700	$43,700	D	$53,900/ $58,300	F	$85,000/ $115,000
8	AA	AA	AA	AA	$16,200	A	A	A	$32,400	B	$43,100	$48,600	D	$64,800	$95,000/ $130,000
9	AA	AA	AA	AA	AA	A	A	A	A	B	B	$47,400	$53,500	$71,300	$66,000/ $145,000
10	AA	AA	AA	AA	AA	$19,500	A	A	A	$38,900	B	B	$51,800/ $58,400	$72,000	$80,000/ $115,000
11	AA	AA	AA	AA	AA	AA	$21,100	A	A	A	$42,200	B	$56,100	$63,300	$85,000/ $125,000
12	AA	AA	AA	AA	AA	AA	$22,700	A	A	A	A	B	B	$68,100	$90,000/ $135,000
13	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$48,700	B	$73,000	$64,800/ $95,000/ $145,000
14	AA	AA	AA	AA	AA	AA	AA	$26,000	A	A	A	A	$52,000	$69,100	$105,000/ $155,000
15	AA	AA	AA	AA	AA	AA	AA	$27,600	A	A	A	A	$55,200	$73,400	$110,000/ $165,000
16	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$58,500	B	$115,000/ $175,000
17	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	A	$61,700	$125,000/ $185,000
18	AA	AA	AA	AA	AA	AA	AA	AA	$32,500	A	A	A	A	$65,000	$130,000/ $195,000

NOTE: When the reported range of household income was included with two or more poverty ranges, additional questions (W9Q12 and W9Q12A) were asked to determine the poverty range for the household. Values within the body of this table represent the border between two poverty ranges. Additional income questions were asked with this value ("Would you say this income was above or below (value)?") to identify the proper poverty range for the household. Values were rounded to the nearest $100 if income was below $75,000 and to the nearest $5,000 if income was over $75,000. When income was less than $20,000, the additional income questions were not asked if the value (i.e., the range border) was less than $900 from either endpoint of the reported range of household income. Letters rather than values signify that the reported range of household income was entirely within one poverty range. The poverty range for each letter shown is listed in the first bulleted section under "Procedures for Assigning Household Poverty Status" of Appendix VII.

Table XIII. Year 2005 reference value table for additional income cascade questions for households in Alaska

Household size	Reported range of total household income														
	Less than $7,500	$7,500-$9,999	$10,000-$12,499	$12,500-$14,999	$15,000-$17,499	$17,500-$19,999	$20,000-24,999	$25,000-$29,999	$30,000-$34,999	$35,000-$39,999	$40,000-$44,999	$45,000-$49,999	$50,000-$59,999	$60,000-$74,999	$75,000 and over
2	AA	A	A	A	$16,000	B	$21,300/ $24,000	D	$32,100	F	F	$48,100	G	$64,100	H
3	AA	AA	A	A	A	A	B	$26,700	D	$37,200	F	F	F	G	$80,000
4	AA	AA	AA	A	A	A	A	B	$32,200	$36,300	D	$48,400	F	$72,600	$95,000
5	AA	AA	AA	$14,100	A	A	A	$28,300	B	$37,600	$42,400	D	$52,300/ $56,500	F	$85,000/ $115,000
6	AA	AA	AA	AA	$16,200	A	A	A	$32,400	B	$43,000	$48,500	D	$64,700	$95,000/ $130,000
7	AA	AA	AA	AA	AA	$18,200	A	A	A	$36,400	B	$48,500	$54,600	$67,400/ $72,900	$110,000/ $145,000
8	AA	AA	AA	AA	AA	AA	A	A	A	A	B	B	$53,900	D	$80,000/ $120,000
9	AA	AA	AA	AA	AA	AA	$22,300	A	A	A	A	B	B	$66,900	$90,000/ $135,000
10	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$48,700	B	$64,700/ 73,000	$95,000 $145,000
11	AA	AA	AA	AA	AA	AA	AA	$26,400	A	A	A	A	$52,800	$70,200	$105,000/ $160,000
12	AA	AA	AA	AA	AA	AA	AA	$28,400	A	A	A	A	$56,800	B	$115,000/ $170,000
13	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	A	B	$120,000/ $185,000
14	AA	AA	AA	AA	AA	AA	AA	AA	$32,500	A	A	A	A	$65,000	$130,000/ $195,000
15	AA	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$69,100	$140,000/ $205,000
16	AA	AA	AA	AA	AA	AA	AA	AA	AA	$36,600	A	A	A	$73,200	$145,000/ $220,000
17	AA	AA	AA	AA	AA	AA	AA	AA	AA	$38,600	A	A	A	A	$155,000/ $230,000
18	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$165,000/ $245,000

NOTE: When the reported range of household income was included with two or more poverty ranges, additional questions (W9Q12 and W9Q12A) were asked to determine the poverty range for the household. Values within the body of this table represent the border between two poverty ranges. Additional income questions were asked with this value ("Would you say this income was above or below (value)?") to identify the proper poverty range for the household. Values were rounded to the nearest $100 if income was below $75,000 and to the nearest $5,000 if income was over $75,000. When income was less than $20,000, the additional income questions were not asked if the value (i.e., the range border) was less than $900 from either endpoint of the reported range of household income. Letters rather than values signify that the reported range of household income was entirely within one poverty range. The poverty range for each letter shown is listed in the first bulleted section under "Procedures for Assigning Household Poverty Status" of Appendix VII.

Table XIV. Year 2005 reference value table for additional income cascade questions for households in Hawaii

Household size	Reported range of total household income														
	Less than $7,500	$7,500-$9,999	$10,000-$12,499	$12,500-$14,999	$15,000-$17,499	$17,500-$19,999	$20,000-24,999	$25,000-$29,999	$30,000-$34,999	$35,000-$39,999	$40,000-$44,999	$45,000-$49,999	$50,000-$59,999	$60,000-$74,999	$75,000 and over
2	AA	A	A	A	B	B	$22,100	$27,300	F	F	F	G	$59,000	H	H
3	AA	$9,300	A	A	A	$18,500	B	$27,800	D	$37,000	F	F	$55,500	$74,000	H
4	AA	AA	$11,100	A	A	A	$22,300	B	$33,400	D	$41,200	F	F	$66,800	$90,000
5	AA	AA	AA	A	A	A	A	$26,000	B	$39,000	D	$48,100	$52,000	F	$80,000/ $105,000
6	AA	AA	AA	AA	A	A	A	A	B	B	C	D	$55,100	F	$90,000/ $120,000
7	AA	AA	AA	AA	$16,800	A	A	A	$33,500	B	B	C	D	$67,000	$62,000/ $135,000
8	AA	AA	AA	AA	AA	$18,600	A	A	A	$37,300	B	B	$55,900	$68,900	$110,000/ $150,000
9	AA	AA	AA	AA	AA	AA	A	A	A	A	$41,000	B	$54,500	$61,500	$80,000/ $125,000
10	AA	AA	AA	AA	AA	AA	$22,400	A	A	A	A	B	B	$67,100	$90,000/ $135,000
11	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$48,500	B	$72,800	$64,500/ $95,000/ $145,000
12	AA	AA	AA	AA	AA	AA	AA	$26,100	A	A	A	A	$52,300	$69,500	$105,000/ $155,000
13	AA	AA	AA	AA	AA	AA	AA	$28,000	A	A	A	A	$56,000	B	$110,000/ $170,000
14	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	A	B	$120,000/ $180,000
15	AA	AA	AA	AA	AA	AA	AA	AA	$31,800	A	A	A	A	$63,500	$125,000/ $190,000
16	AA	AA	AA	AA	AA	AA	AA	AA	$33,600	A	A	A	A	$67,300	$135,000/ $200,000
17	AA	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$71,000	$140,000/ $215,000
18	AA	AA	AA	AA	AA	AA	AA	AA	AA	$37,400	A	A	A	A	$150,000/ $225,000

NOTE: When the reported range of household income was included with two or more poverty ranges, additional questions (W9Q12 and W9Q12A) were asked to determine the poverty range for the household. Values within the body of this table represent the border between two poverty ranges. Additional income questions were asked with this value ("Would you say this income was above or below (value)?") to identify the proper poverty range for the household. Values were rounded to the nearest $100 if income was below $75,000 and to the nearest $5,000 if income was over $75,000. When income was less than $20,000, the additional income questions were not asked if the value (i.e., the range border) was less than $900 from either endpoint of the reported range of household income. Letters rather than values signify that the reported range of household income was entirely within one poverty range. The poverty range for each letter shown is listed in the first bulleted section under "Procedures for Assigning Household Poverty Status" of Appendix VII.

Table XV. Year 2006 reference value table for additional income cascade questions for households in the 48 contiguous States and District of Columbia

Household size	Reported range of total household income													
	Less than $7,500	$7,500-$9,999	$10,000-$12,499	$12,500-$14,999	$15,000-$17,499	$17,500-$19,999	$20,000-24,999	$25,000-$29,999	$30,000-$34,999	$35,000-$39,999	$40,000-$44,999	$45,000-$49,999	$50,000-$59,999	$60,000-$74,999	$75,000 and over
2	$6,600	A	A	$13,200	B	C	D	$26,400	F	F	G	G	$52,800	H	H
3	AA	$8,300	A	A	$16,600	B	$22,100	D	$33,200	F	F	F	G	$66,400	H
4	AA	AA	A	A	A	A	B	$26,600	D	$37,000	F	F	F	G	$80,000
5	AA	AA	$11,700	A	A	A	$23,400	B	$31,100	D	$43,300	$46,800	F	$70,200	$95,000
6	AA	AA	AA	$13,400	A	A	A	$26,800	B	C	D	D	$53,600	F	80,000 / 105,000
7	AA	AA	AA	AA	A	A	A	A	B	B	C	D	$55,900	F	90,000 / 120,000
8	AA	AA	AA	AA	$16,800	A	A	A	$33,600	B	B	C	D	62200 / 67200	100,000 / 135,000
9	AA	AA	AA	AA	AA	$18,500	A	A	A	$37,000	B	B	$55,500	68500 / 74000	110,000 / 150,000
10	AA	AA	AA	AA	AA	AA	A	A	A	A	B	B	$53,700	D	80,000 / 120,000
11	AA	AA	AA	AA	AA	AA	$21,900	A	A	A	$43,800	B	$58,300	$65,700	90,000 / 130,000
12	AA	AA	AA	AA	AA	AA	$23,600	A	A	A	A	$47,200	B	62800 / 70800	95,000 / 140,000
13	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	A	B	$67,300	100,000 / 150,000
14	AA	AA	AA	AA	AA	AA	AA	$27,000	A	A	A	A	$54,000	$71,800	110,000 / 160,000
15	AA	AA	AA	AA	AA	AA	AA	$28,700	A	A	A	A	$57,400	B	115,000 / 170,000
16	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	A	B	120,000 / 180,000
17	AA	AA	AA	AA	AA	AA	AA	AA	$32,100	A	A	A	A	$64,200	130,000 / 195,000
18	AA	AA	AA	AA	AA	AA	AA	AA	$33,800	A	A	A	A	$67,600	135,000 / 205,000

NOTE: When the reported range of household income was included with two or more poverty ranges, additional questions (W9Q12 and W9Q12A) were asked to determine the poverty range for the household. Values within the body of this table represent the border between two poverty ranges. Additional income questions were asked with this value ("Would you say this income was above or below (value)?") to identify the proper poverty range for the household. Values were rounded to the nearest $100 if income was below $75,000 and to the nearest $5,000 if income was over $75,000. When income was less than $20,000, the additional income questions were not asked if the value (i.e., the range border) was less than $900 from either endpoint of the reported range of household income. Letters rather than values signify that the reported range of household income was entirely within one poverty range. The poverty range for each letter shown is listed in the first bulleted section under "Procedures for Assigning Household Poverty Status" of Appendix VII.

Table XVI. Year 2006 reference value table for additional income cascade questions for households in Alaska

Household size	Reported range of total household income														
	Less than $7,500	$7,500-$9,999	$10,000-$12,499	$12,500-$14,999	$15,000-$17,499	$17,500-$19,999	$20,000-24,999	$25,000-$29,999	$30,000-$34,999	$35,000-$39,999	$40,000-$44,999	$45,000-$49,999	$50,000-$59,999	$60,000-$74,999	$75,000 and over
2	AA	$8,300	A	A	$16,500	B	$22,000	D	$33,000	F	F	F	G	$66,000	H
3	AA	AA	A	A	A	A	B	$27,600	$31,100	$38,400	$41,500	F	F	$62,300	$85,000
4	AA	AA	AA	A	A	A	A	B	$33,300	$37,500	D	$46,300	F	F	$100,000
5	AA	AA	AA	AA	A	A	A	A	B	$38,900	$43,900	D	54100 / 58500	F	90,000 / 115,000
6	AA	AA	AA	AA	$16,800	A	A	A	$33,500	B	B	C	D	62000 / 67000	100,000 / 135,000
7	AA	AA	AA	AA	AA	$18,900	A	A	A	$37,800	B	B	$56,600	$70,000	115,000 / 150,000
8	AA	AA	AA	AA	AA	AA	$21,000	A	A	A	$42,000	B	$55,900	$63,000	85,000 / 125,000
9	AA	AA	AA	AA	AA	AA	$23,100	A	A	A	A	$46,300	B	61,500 / 69,400	95,000 / 140,000
10	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	A	B	$67,200	100,000 / 150,000
11	AA	AA	AA	AA	AA	AA	AA	$27,400	A	A	A	A	$54,800	$72,800	110,000 / 165,000
12	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$59,000	B	120,000 / 175,000
13	AA	AA	AA	AA	AA	AA	AA	AA	$31,600	A	A	A	A	$63,300	125,000 / 190,000
14	AA	AA	AA	AA	AA	AA	AA	AA	$33,800	A	A	A	A	$67,500	135,000 / 205,000
15	AA	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$71,800	145,000 / 215,000
16	AA	AA	AA	AA	AA	AA	AA	AA	AA	$38,000	A	A	A	A	150,000 / 230,000
17	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	160,000 / 240,000
18	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	$42,300	A	A	A	170,000 / 255,000

NOTE: When the reported range of household income was included with two or more poverty ranges, additional questions (W9Q12 and W9Q12A) were asked to determine the poverty range for the household. Values within the body of this table represent the border between two poverty ranges. Additional income questions were asked with this value ("Would you say this income was above or below (value)?") to identify the proper poverty range for the household. Values were rounded to the nearest $100 if income was below $75,000 and to the nearest $5,000 if income was over $75,000. When income was less than $20,000, the additional income questions were not asked if the value (i.e., the range border) was less than $900 from either endpoint of the reported range of household income. Letters rather than values signify that the reported range of household income was entirely within one poverty range. The poverty range for each letter shown is listed in the first bulleted section under "Procedures for Assigning Household Poverty Status" of Appendix VII.

Table XVII. Year 2006 reference value table for additional income cascade questions for households in Hawaii

Household size	Reported range of total household income														
	Less than $7,500	$7,500-$9,999	$10,000-$12,499	$12,500-$14,999	$15,000-$17,499	$17,500-$19,999	$20,000-24,999	$25,000-$29,999	$30,000-$34,999	$35,000-$39,999	$40,000-$44,999	$45,000-$49,999	$50,000-$59,999	$60,000-$74,999	$75,000 and over
2	AA	A	A	A	B	B	$22,800	$28,100	F	F	F	G	G	H	H
3	AA	AA	A	A	A	$19,100	B	$28,600	D	$38,200	F	F	$57,300	G	H
4	AA	AA	$11,500	A	A	A	$23,000	B	C	D	$42,600	$46,000	F	$69,000	$90,000
5	AA	AA	AA	$13,500	A	A	A	$26,900	B	C	D	D	$53,800	F	80,000 / 110,000
6	AA	AA	AA	AA	A	A	A	A	B	B	C	$46,200	$57,000	$61,600	90,000 / 125,000
7	AA	AA	AA	AA	AA	A	A	A	A	B	B	$46,200	$52,100	64,300/ 69,500	105,000 / 140,000
8	AA	AA	AA	AA	AA	$19,300	A	A	A	$38,600	B	B	51400/ 57900	$71,500	80,000 / 115,000
9	AA	AA	AA	AA	AA	AA	$21,300	A	A	A	$42,600	B	$56,600	$63,800	85,000 / 130,000
10	AA	AA	AA	AA	AA	AA	$23,200	A	A	A	A	$46,500	B	61800/ 69,700	90,000 / 140,000
11	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	A	B	$67,000	100,000 / 150,000
12	AA	AA	AA	AA	AA	AA	AA	$27,100	A	A	A	A	$54,300	$72,200	110,000 / 165,000
13	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$58,200	B	115,000 / 175,00
14	AA	AA	AA	AA	AA	AA	AA	AA	$31,100	A	A	A	A	$62,100	125,000 / 185,000
15	AA	AA	AA	AA	AA	AA	AA	AA	$33,000	A	A	A	A	$66,000	130,000 / 200,000
16	AA	AA	AA	AA	AA	AA	AA	AA	AA	A	A	A	A	$69,900	140,000 / 210,000
17	AA	AA	AA	AA	AA	AA	AA	AA	AA	$36,900	A	A	A	$73,800	150,000 / 220,000
18	AA	AA	AA	AA	AA	AA	AA	AA	AA	$38,900	A	A	A	A	155,000 / 235,000

NOTE: When the reported range of household income was included with two or more poverty ranges, additional questions (W9Q12 and W9Q12A) were asked to determine the poverty range for the household. Values within the body of this table represent the border between two poverty ranges. Additional income questions were asked with this value ("Would you say this income was above or below (value)?") to identify the proper poverty range for the household. Values were rounded to the nearest $100 if income was below $75,000 and to the nearest $5,000 if income was over $75,000. When income was less than $20,000, the additional income questions were not asked if the value (i.e., the range border) was less than $900 from either endpoint of the reported range of household income. Letters rather than values signify that the reported range of household income was entirely within one poverty range. The poverty range for each letter shown is listed in the first bulleted section under "Procedures for Assigning Household Poverty Status" of Appendix VII.

Appendix VIII

Program Names Used for Medicaid and SCHIP Questions

For questions regarding the Medicaid and the State Children's Health Insurance Program (SCHIP), the state-specific program names for each type of coverage were included in the question text, in case respondents recognized the state program name but not the national program affiliation. These program names are shown in table XVIII.

States could be divided into three classes depending on how they named the created or expanded programs that use Title XXI funds. In 2005-06, 28 states had distinct Medicaid and SCHIP programs and used different names for their SCHIP programs than for their Medicaid programs. Nine states had distinct Medicaid and SCHIP programs but used the same (or substantially similar) name for both programs. Twelve states and DC used Title XXI funds to expand their Medicaid program without establishing a distinct SCHIP program. One state did not have an SCHIP program in 2005-06.

Eligibility for specific health insurance questions and the use of state-specific program names were based on this classification. For states that did not have a distinct SCHIP program or that used similar names for both the Medicaid and SCHIP programs, a single question about both Medicaid and SCHIP was asked. This question (C7Q04) included the state-specific program names (if any) for both types of programs. For all other states, the name of the Medicaid program was used for the question regarding Medicaid (C7Q01), and the name of the SCHIP program was used for the question regarding SCHIP (C7Q02).

Because a single question about both Medicaid and SCHIP was asked for nearly half the states, survey analysts will not be able to distinguish between Medicaid and SCHIP coverage in national or regional analyses. Analysts may be required to report on "public" insurance only.

Table XVIII. State-specific insurance program names used for questions about Medicaid and the State Children's Health Insurance Program

State	Category[1]	Name used with Medicaid question (C7Q01)	Name used with SCHIP question (C7Q02)	Name used with combination question (C7Q04)
Alabama	A	Patient 1st Program	ALL Kids	. . .
Alaska	B	. . .	. . .	Denali KidCare
Arizona	A	AHCCCS	KidsCare	. . .
Arkansas	A	ConnectCare	ARKids First	. . .
California	A	Medi-Cal	Healthy Families Program	. . .
Colorado	A	Medicaid's Baby Care / Kids Care Program, the Primary Care Physician Program, or the MAC Card	Child Health Plan Plus	. . .
Connecticut	C	. . .	. . .	the HUSKY Plan
Delaware	A	Diamond State Health Plan	Delaware Healthy Children Program	. . .
District of Columbia	B	. . .	. . .	DC Healthy Families
Florida	C	. . .	. . .	Florida KidCare, which includes the Healthy Kids and Medi-Kids programs
Georgia	A	Georgia Better Health Care Program	PeachCare for Kids	. . .
Hawaii	B	. . .	. . .	Hawaii-QUEST
Idaho	A	Healthy Connections	Children's Health Insurance Program, or CHIP	. . .
Illinois	C	. . .	. . .	KidCare
Indiana	C	. . .	. . .	the Hoosier Healthwise program
Iowa	A	MediPASS	HAWK-I (Healthy and Well Kids in Iowa)	. . .
Kansas	A	HealthConnect Kansas	HealthWave	. . .
Kentucky	A	KENPAC	Kentucky Children's Health Insurance Program (K-CHIP)	. . .
Louisiana	B	. . .	. . .	CommunityCARE program or the Lousiana Children's Health Insurance Program
Maine	C	. . .	. . .	Maine Care
Maryland	A	Medical Assistance Program, or HealthChoice	Maryland Children's Health Program	. . .
Massachusetts	C	. . .	. . .	MassHealth
Michigan	A	Healthy Kids Program	MI-Child Program	. . .
Minnesota	B	. . .	. . .	Medical Assistance or MinnesotaCare
Mississippi	A	(none)	Mississippi Children's Health Insurance Program	. . .
Missouri	B	. . .	. . .	MC-Plus For Kids
Montana	A	Passport to Health program	Montana Child Health Insurance Plan, or CHIP	. . .
Nebraska	B	. . .	. . .	Kids Connection or the Nebraska Health Connection program
Nevada	A	(none)	Nevada Check Up	. . .

State	Category[1]	Name used with Medicaid question (C7Q01)	Name used with SCHIP question (C7Q02)	Name used with combination question (C7Q04)
New Hampshire	A	Healthy Kids Gold	Healthy Kids Silver	. . .
New Jersey	A	New Jersey Care 2000-PLUS	New Jersey KidCare	. . .
New Mexico	B	. . .	. . .	SALUD!, or New MexiKids
New York	C	. . .	. . .	Child Health Plus
North Carolina	A	Carolina ACCESS, or Healthcare Connection	North Carolina Health Choice for Children	. . .
North Dakota	A	(none)	Healthy Steps program	. . .
Ohio	B	. . .	. . .	Healthy Start
Oklahoma	B	. . .	. . .	SoonerCare
Oregon	A	Oregon Health Plan	Oregon Children's Health Insurance Program	. . .
Pennsylvania	A	HealthChoices, or the ACCESS Card	CHIP, the Children's Health Insurance Program	. . .
Rhode Island	B	. . .	. . .	RIte Care
South Carolina	B	. . .	. . .	Partners for Healthy Children program
South Dakota	C	. . .	. . .	the PRIME program, or the Child Health Insurance Program
Tennessee	D	. . .	. . .	TennCare
Texas	A	State of Texas Access Reform program, or STAR program	TexCare Partnership, which includes the Texas Children's Health Insurance Program	. . .
Utah	A	(none)	Utah Children's Health Insurance Program, or CHIP	. . .
Vermont	C	. . .	. . .	Dr. Dynasaur
Virginia	A	Medallion program	FAMIS (Family Access to Medical Insurance Security Plan)	. . .
Washington	A	Basic Health Plus	Washington State's Children's Health Insurance Program	. . .
West Virginia	A	West Virginia Physician Assured Access System, or the Mountain Health Trust program	West Virginia Children's Health Insurance Program	. . .
Wisconsin	B	. . .	. . .	BadgerCare
Wyoming	A	(none)	Wyoming KidCare	. . .

[1]States in category A had separate Medicaid and SCHIP programs and used different names for their SCHIP programs than for their Medicaid programs. For states in category B, the SCHIP program was an expansion of the Medicaid program. States in category C had separate Medicaid and SCHIP programs, but used the same (or substantially similar) name for both programs. The state in category D did not have an SCHIP program in 2005-06. For states in category A, separate Medicaid and SCHIP questions were asked. For states in categories B, C, and D, a single combination question about public insurance coverage was asked using the program name.

Appendix IX

Hurricane Evacuees Section

Four hurricanes during 2005 affected calling for the 2005-06 National Survey of CSHCN. Hurricane Dennis occurred in early July and affected Florida, Georgia, and Alabama. Hurricane Katrina occurred in late August and affected Florida, Louisiana, Mississippi, Alabama, and portions of Tennessee. Hurricane Rita occurred in late September and affected Texas, Arkansas, and Louisiana. Finally, Hurricane Wilma occurred in late October and affected portions of Florida. When each of these hurricanes hit, the telephone center stopped calling the affected areas until it had been determined that most power and telephone lines had been restored to the area.

Hurricane Katrina had the largest and most extended impact on the survey. Hurricane Katrina hit the Miami, FL area on August 25, 2005, and the Central Gulf Coast region on August 29, 2005. The telephone center stopped making calls to households in Florida on August 27, and to all households in Mississippi and Louisiana on August 29. Calls to households in Florida resumed on September 9, 2005. Given the lengthy recovery period in the affected Mississippi and Louisiana areas, the decision was made to cease dialing for all cases in those areas for the remainder of 2005. Because the number of interviews completed in Louisiana prior to August 29 was minimal (443 households, 800 children screened for special health care needs, 117 main sample interviews, 13 referent sample interviews), a decision was made to exclude these "pre-Katrina" cases from the final publicly released data files and assign a weight of zero to these cases. However, these interviews were still included in response rate calculations and in tables reporting the total number of completed interviews.

Interviewers were cautioned that they had to be sensitive when calling respondents who were affected by the hurricane. Because the first question in the survey asks for the number of children living in the household, there was concern that evacuees who were living somewhere else may be picked up through this screener. Interviewers were reminded to follow established directions for this question to determine whether or not a child should be included in this count. If the child currently living in the household had been or was expected to be living in the household for two months, he or she was included in the count of children.

In November 2005, MCHB asked NCHS to add questions to the interview to identify CSHCN who were hurricane evacuees and to determine if they had unmet health care needs during the evacuation. The Hurricane Evacuees section was added to the questionnaire at the start of Quarter 1, 2006 on January 5, 2006.

Questionnaire Items

The Hurricane Evacuees section was inserted as Section 6D in the questionnaire. This placement was chosen because it provided a natural flow in terms of the types of questions that were asked, being preceded by the "Ease of Service Use" section and followed by the "Health Insurance" section. All main and referent sample households that had a child selected for an interview received this section.

The first question of the section (K1) was asked of all households with a selected child: "Last year, did (CHILD) leave (his/her) home for one night or longer because of Hurricane Katrina or Rita?" If yes, the respondent was asked additional hurricane-related questions. If no, the household skipped immediately to the next survey section (Section 7: Health Insurance). The Hurricane Evacuee questions asked about the types of special arrangements the child may have needed because of health conditions; whether the household had trouble finding shelter due to the child's health conditions; whether the child moved back into the home he/she lived in before the hurricanes; how long the child was away from the home he/she lived in before the hurricanes; whether the child lived and/or still lived in temporary housing; whether any health care was needed and received while the child was away from home; and whether any durable medical equipment was needed and received while the child was away from home.

Two additional open-ended questions were added into the questionnaire on February 23, 2006. These questions asked respondents to identify what special arrangements were needed (K2A) and what health conditions made it difficult to find temporary shelter (K3A). A total of 15 respondents should have gotten K2A but did not, and two respondents should have gotten K3A but did not.

Key Results

A total of 23,630 households with CSHCN in the main sample were asked question K1, and 1,008 hurricane evacuees with special health care needs were identified (4.3% of the responding households). Weighted estimates suggest that more than 5% of CSHCN nationally left home for one night or longer because of Hurricane Katrina or Rita. It should be noted, however, that these questions do not allow us to determine whether the children's special health care needs existed prior to or developed after the evacuation. In addition, the sample selection procedures excluded CSHCN living in institutional settings (e.g., hotels, temporary shelters) or other locations without landline residential telephones.

Follow-up questions asked whether the children required any special arrangements to leave because of their health, if the families had trouble finding temporary shelter because of the children's health, and if the children eventually moved back to the same homes where they lived before the hurricanes. Based on weighted estimates from the main sample, the majority of CSHCN who were hurricane evacuees did not need special arrangements (86.8%), did not have trouble finding temporary shelter because of their health (96.3%), and eventually moved back to the same homes where they lived before the hurricanes (88.0%). Of those who had not moved back at the time of the interview, 47.4% were living in short-term or temporary housing.

In the referent sample, 4,074 households with children were asked question K1, and 166 hurricane evacuees were identified.

Data Files

In the weeks following the hurricanes, dozens of organizations created databases with personal information about evacuees to assist people searching for family and friends. It is unknown whether these databases are sufficiently detailed to permit someone to link specific households from the this survey with individually identifiable information from the evacuee

databases. Nevertheless, to protect the confidentiality of individual respondents and children, variables that would identify children as hurricane evacuees have been suppressed in the publicly released survey data files. Analysts interested in working with data that were suppressed to protect confidentiality may apply to access unmodified data files through the NCHS Research Data Center (RDC).

Appendix X

Incentive Effort

To achieve the desired number of completed interviews per state and improve response rates, monetary incentives were offered to select respondents. Due to previous success with incentive use in the 2003 National Survey of Children's Health and the National Immunization Survey, it was decided that the National Survey of CSHCN would offer incentives to known eligible households who had not completed the interview and whose quarterly sample cohort was no longer being called (known as a "closed quarter"). Completing interviews with known eligible households from previously closed quarters would increase the interview completion rate and the overall response rate.

Eligible Cases

Known eligible households that had not at least partially completed the interview (i.e., had not completed Section 7) and whose quarterly sample cohort was no longer being called (known as a closed quarter) were offered incentives. Calls to these households had been halted in that quarter because the limit on the number of refusals had been reached (defined typically as two statements by a household member that he or she was not interested in participating or three hang-ups) or because repeated attempts to reach an appropriate respondent at a convenient time had not yielded a completed interview. Respondents who asked us to put their number on the survey's "Do Not Call" list and respondents who had been hostile during a previous call were not eligible for incentives. In addition, households that had been offered an incentive by the NIS were not eligible for a National Survey of CSHCN incentive.

Three groups were targeted for incentives:

- Group 1: Main sample households that had an age-eligible child but had not completed the CSHCN Screener.
- Group 2: Main sample households that had completed the CSHCN Screener and had a child with special health care needs, but had not completed the interview.
- Group 3: Referent sample households that had an age-eligible child but had not completed the interview. These households may or may not have completed the CSHCN Screener.

The vast majority of non-complete cases in previous closed quarters came from Group 1. Due to the large size of this group and the cost associated with offering incentives to the entire group, we targeted incentives in group 1 to households in states with the lowest response rates. Thirty-four states with an overall unweighted response rate below 55% were targeted. Cases in all states were called for the other groups.

Procedures

Households with known addresses—approximately 75% of cases eligible for incentives—were mailed an informational letter along with a $5 incentive and were offered an additional $10. Cases without an address were offered $15 when they were re-contacted. See appendix XI for the letters sent with the incentives.

Upon re-contact, households were read an introductory script that varied the dollar amount depending on whether or not an advance letter had been sent. For the main sample, the script used if a household with age-eligible children had not yet completed the CSHCN Screener was:

> Hello, my name is ____. I'm calling on behalf of the Centers for Disease Control and Prevention. Earlier we called your household for an interview about the health of children and teenagers. After just a few questions I can determine if your household is eligible to participate. In appreciation for your time, we will send you ($10/ $15).

For main sample cases that had completed the CSHCN Screener and for all referent sample cases, the script was:

> Hello, my name is ____. I'm calling on behalf of the Centers for Disease Control and Prevention. Earlier, someone in your household started an interview about the health of children and teenagers, and we began talking about one child in your household. I'm calling back now to continue the interview. In appreciation for your time, we will send you ($10/ $15).

If a previous call had identified the name of the appropriate respondent, the interviewer asked to talk to that person. After speaking with us and either completing the interview or not, respondents were offered the rest of the incentive. If an address was available, it was confirmed. If a letter had not been mailed, a mailing address was collected. If the respondent refused to provide a valid mailing address, he/she did not receive the incentive. All other aspects of the interview remained the same.

Upon callback, if a household reported that there were no children less than 18 years of age living or staying in the household, that information was collected. However, the originally reported number of children was restored during data cleaning.

Data Collection Schedule

Incentive cases were called starting on July 27, 2006 with cases originally called during Quarter 4, 2005. The non-complete Quarter 2 and Quarter 3, 2005 cases were not offered incentives because more than 6 months had passed since these cases had last been called and because the overall response rate for those quarters was already above 50%. The dates that incentives were offered are shown in table XIX.

Expanded Incentive Effort

The incentive effort results demonstrated improved response rates commensurate with increased participation. In quarterly sample for which the incentives had been offered to date (Quarter 4, 2005 and Quarter 1, 2006), the overall response rates had increased by 4.6 to 7.8 percentage points, depending on the quarter and group type. Nonetheless, there continued to be challenges with the response rates, particularly in states with large populations and historically low participation rates. Without further improvements to the response rates, these states would have had a detrimental effect on the final weighted response rate. More importantly, there also was a desire to improve the representation of households with CSHCN in these states.

Beginning in fall 2006, the following additions to the existing incentive protocol were made to maximize these rates and improve state-level representation of households with CSHCN:

- Addition #1: Group 1 cases in states with unweighted response rates at or above 55% were also offered incentives. Initially, these cases were not included due to cost considerations, but their inclusion enabled the application of a consistent method to identify incentive-eligible cases across all 50 states and DC. This expansion began on September 22, 2006 with Quarter 4, 2005 cases and on October 7, 2006 with Quarter 1, 2006 cases before other quarters were called.
- Addition #2: There were 13 states where response rates were still lagging under 50%. Five of these states were among the 10 states with the largest populations in the U.S. (CA, TX, NY, FL and NJ), and thus their response rates had a disproportionately large impact on the survey's overall weighted response rate. Beginning on October 25, 2006 with Quarter 2, 2006 cases, the incentive amount was increased from $15 to $25 in these states. Fifteen dollars were still offered in states where the response rates were above 50%.

With the exception of these additions, the methodology, operational procedures, and letters were consistent across quarters.

Response Rates

Overall, the incentive effort resulted in an additional 3,151 completed interviews – 2,594 for the main sample with special health care needs, and 557 for the referent sample. Table XX contains the number of completes achieved with incentive use for each quarter.

The incentive effort improved the overall unweighted response rate for the main sample by 3.5 percentage points and for the referent sample by 4.5 percentage points. Tables XXI and XXII provide additional detail.

As noted earlier, a $25 incentive was offered in states with unweighted response rates lagging below 50% even after incentives were offered to cases in two quarters. Overall, for both the main and referent samples, a higher percent of eligible households completed interviews with the $15 incentive. While it appears that the $15 incentive was more effective in getting respondents to complete the interview, this is confounded by the fact that households offered $25 incentives were in states that already had lower response rates. It may be the case that even the

increased incentive amount was not enough to improve those response rates. Table XXIII presents additional information on incentive response rates by dollar amount.

Table XIX. Data collection schedule for incentive effort

	Regular production		Incentive effort	
Sample	Start	End	Start	End
Quarter 4, 2005	10/5/2005	3/15/2006	7/27/2006	10/4/2006
Quarter 1, 2006	1/10/2006	6/11/2006	8/3/2006	10/31/2006
Quarter 2, 2006	4/6/2006	9/17/2006	10/25/2006	12/16/2006
Quarter 3, 2006	7/6/2006	11/29/2006	12/12/2006	1/29/2007

Table XX. Number of completed interviews from sample offered monetary incentives by sample type

Sample	Main sample[1]	Referent sample
Quarter 4, 2005	699	144
Quarter 1, 2006	837	183
Quarter 2, 2006	560	162
Quarter 3, 2006	498	68
Total	2,594	557

[1]Number of completed interviews in the main sample refers to special-needs interviews only.

Table XXI. Unweighted response rates before and after incentive effort by sample type

	Pre-incentive	Post-incentive
Main sample		
Household resolution rate	83.5	83.5
Age-screener completion rate	88.9	88.9
Household-level special-needs screener completion rate	77.1	80.4
Special needs interview completion rate	88.7	91.0
Overall special-needs interview response rate	50.7	54.3
Referent sample		
Household Resolution Rate	82.6	82.6
Age-Screener Completion Rate	88.0	88.0
Interview Completion Rate	62.1	68.3
Overall Response Rate	45.1	49.6

Table XXII. Unweighted special-needs interview response rate before and after incentive effort by state

State	Pre-incentive	Post-incentive
Alabama	48.6	53.0
Alaska	58.3	59.8
Arizona	49.6	52.4
Arkansas	56.0	59.3
California	43.9	47.5
Colorado	52.4	54.6
Connecticut	47.1	50.8
Delaware	44.7	47.4
District of Columbia	47.5	51.1
Florida	43.5	47.0
Georgia	48.5	52.2
Hawaii	45.6	47.8
Idaho	54.5	57.2
Illinois	47.8	52.0
Indiana	53.8	57.7
Iowa	58.3	61.4
Kansas	57.4	61.5
Kentucky	51.8	56.2
Louisiana	50.9	54.0
Maine	55.7	58.6
Maryland	45.8	49.9
Massachusetts	46.0	49.9
Michigan	51.4	56.0
Minnesota	56.4	59.3
Mississippi	48.0	51.8
Missouri	53.4	58.5
Montana	61.2	64.4
Nebraska	59.1	62.9
Nevada	43.8	46.8
New Hampshire	49.9	53.3
New Jersey	41.6	45.4
New Mexico	54.7	57.9
New York	42.8	46.7
North Carolina	49.8	52.5
North Dakota	61.8	65.8
Ohio	51.4	56.2
Oklahoma	53.1	57.1
Oregon	54.4	56.4
Pennsylvania	49.3	53.2
Rhode Island	46.8	50.7
South Carolina	47.1	51.8
South Dakota	59.3	64.0
Tennessee	50.0	54.3
Texas	47.3	50.7
Utah	55.1	56.6

State	Pre-incentive	Post-incentive
Vermont	57.1	60.4
Virginia	49.0	53.2
Washington	52.6	55.7
West Virginia	50.5	54.1
Wisconsin	56.0	59.7
Wyoming	57.5	60.5

Table XXIII. Interview completion rates for incentive effort by size of monetary incentive

	$15	$25
Known Age-Eligible Main Sample Households without a Completed CSHCN Screener		
Number of households	21,203	3,174
Number successfully screened	9,297	1,202
Percent successfully interviewed	43.8	37.9
Known Main Sample Households with Eligible CSHCN		
Number of households	3,978	525
Number successfully interviewed	2,315	279
Percent successfully interviewed	58.2	53.1
Known Age-Eligible Referent Sample Households		
Number of households	1,257	375
Number successfully interviewed	446	111
Percent successfully interviewed	35.5	29.6

Appendix XI

Advance Letters

When this report is published in 2008, the following 15 letters will be included in this appendix:

1) Advance letter for Quarters 2-4, 2005
2) Advance letter for Quarters 1-2, 2006
3) Advance letter for Quarter 3, 2006
4) Advance letter for Quarter 4, 2006
5) Advance letter for households eligible for stand-alone questionnaire
6) Advance letter when incentives were offered to Quarter 4, 2005 sample
7) Advance letter when incentives were offered to Quarter 1, 2006 sample
8) Advance letter when $15 incentives were offered to Quarter 2, 2006 sample
9) Advance letter when $25 incentives were offered to Quarter 2, 2006 sample
10) Advance letter when $15 incentives were offered to Quarter 3, 2006 sample
11) Advance letter when $25 incentives were offered to Quarter 3, 2006 sample
12) Thank you letter when $15 incentives were offered and advance letter was sent
13) Thank you letter when $15 incentives were offered and advance letter was not sent
14) Thank you letter when $25 incentives were offered and advance letter was sent
15) Thank you letter when $25 incentives were offered and advance letter was not sent

Appendix XII

Disposition Code Frequencies and Response Rate Calculations

Table XXIV. Frequencies of disposition codes for main sample

Disposition code by name	Disposition category	Frequency	Percent of total
Total number of telephone lines in sample		4,014,990	100.00
Not attempted	UH	55	0.00
No contact	UH	295,143	7.35
Answering machine	UH	126,346	3.15
Pending screener, residential status unknown, hang up during introduction	UH	76,017	1.89
Pending screener, residential status unknown, call back	UH	43,519	1.08
Pending screener, residential status unknown, appointment	UH	12,386	0.31
Pending screener, residential status unknown, break-off	UH	7,586	0.19
Pending screener, residential status unknown, finalized due to refusals	UH	85,723	2.14
Pending screener, residential status unknown, other	UH	15,490	0.39
Pre-finalized Do Not Call	UOC	865	0.02
Pending screener, known household, call back	UOC	12,552	0.31
Pending screener, known household, appointment	UOC	19,412	0.48
Pending screener, known household, break-off	UOC	861	0.02
Pending screener, known household, finalized due to refusals	UOC	45,617	1.14
Pending screener, known household, other	UOC	26,123	0.65
Age eligible, in National Immunization Survey interview	UOS	7,897	0.20
Age eligible, special-needs screener incomplete, finalized due to refusals	UOS	25,252	0.63
Age eligible, special-needs screener incomplete, finalized for other reason	UOS	13,811	0.34
Screened - Age ineligible, no children under 18 years old	XC	601,919	14.99
Screened - Age ineligible, no adults over 17 years old	XC	2,400	0.06
Special-needs screener complete (without special needs), finalized due to refusals	XS	2,033	0.05
Special-needs screener complete (without special needs), finalized for other reason	XS	672	0.02
Completed interview (without special needs)	XS	144,454	3.60
Special-needs screener complete (with special needs), finalized due to refusals	R	2,550	0.06
Special-needs screener complete (with special needs), finalized for other reason	R	1,534	0.04
Partial (with special needs), finalized due to refusals	P	230	0.01
Partial (with special needs), finalized for other reason	P	145	0.00
Completed interview (with special needs)	I	40,465	1.01
Fax/modem	Z	55,170	1.37
Nonworking	Z	410,168	10.22
Number changed	Z	1,613	0.04
Not residential	Z	200,021	4.98
GENESYS-resolved telephone numbers (nonworking, business, and fax/modem)	Z	1,736,961	43.26

Table XXV. Unweighted response rate calculations for main sample

Disposition categories and response rates	Frequency or calculated rate	Code or formula
Summary of disposition categories		
Not resolved as residential/nonresidential	662,265	UH
Out of scope (i.e., business, nonworking, fax/modem)	2,403,933	Z
Known household, age eligibility undetermined	105,430	UOC
Age-screened household, no child in range	604,319	XC
Known age-eligible household, special needs eligibility undetermined	46,960	UOS
Special-needs screened, no eligible child	147,159	XS
Special-needs eligible household, interview not completed	4,084	R
Special-needs eligible household, partially completed interview	375	P
Special-needs eligible household, completed interview	40,465	I
Total	4,014,990	
Calculation of response rates		
Interview completion rate (ICR)	90.9	(P+I)/(R+P+I)
Special-needs screener completion rate (SNSCR)	80.4	(XS+R+P+I)/ (UOS+XS+R+P+I)
Age-screener completion rate (ASCR)	88.9	(XC+UOS+XS+R+P+I)/ (UOC+XC+UOS+XS+R+P+I)
Resolution rate (RR)	83.5	(Z+UOC+XC+UOS+XS+R+P+I)/ (UH+Z+UOC+XC+UOS+XS+R+P+I)
Overall special-needs interview response rate	54.2	(ICR)(SNSCR)(ASCR)(RR)

NOTE. Main sample cases in Louisiana from Quarter 2, 2005 and Quarter 3, 2005 are included in the frequency counts and unweighted response rates. These include 58 cases that had not yet received any calls when dialing was stopped in Louisiana due to Hurricane Katrina.

Table XXVI. Frequencies of disposition codes for referent sample

Disposition code by name	Disposition category	Frequency	Percent of total
Total number of telephone lines in sample		146,695	100.00
Not attempted	UH	3	0.00
No contact	UH	11,432	7.79
Answering machine	UH	4,768	3.25
Pending screener, residential status unknown, hang up during introduction	UH	3,092	2.11
Pending screener, residential status unknown, call back	UH	1,726	1.18
Pending screener, residential status unknown, appointment	UH	509	0.35
Pending screener, residential status unknown, break-off	UH	288	0.20
Pending screener, residential status unknown, finalized due to refusals	UH	3,352	2.29
Pending screener, residential status unknown, other	UH	431	0.29
Pre-finalized Do Not Call	UOC	16	0.01
Pending screener, known household, call back	UOC	497	0.34
Pending screener, known household, appointment	UOC	915	0.62
Pending screener, known household, break-off	UOC	26	0.02
Pending screener, known household, finalized due to refusals	UOC	1,876	1.28
Pending screener, known household, other	UOC	900	0.61
Age eligible, in NIS interview	UOS	354	0.24
Age eligible, special-needs screener incomplete, finalized due to refusals	UOS	1,061	0.72
Age eligible, special-needs screener incomplete, finalized for other reason	UOS	632	0.43
Screened - Age ineligible, no children under 18 years old	XC	22,037	15.02
Screened - Age ineligible, no adults over 17 years old	XC	93	0.06
Special-needs screener complete (without special-needs), finalized due to refusals	R	453	0.31
Special-needs screener complete (without special-needs), finalized for other reason	R	237	0.16
Special-needs screener complete (with special-needs), finalized due to refusals	R	57	0.04
Special-needs screener complete (with special-needs), finalized for other reason	R	46	0.03
Partial (without special-needs), finalized due to refusals	P	40	0.03
Partial (without special-needs), finalized for other reason	P	24	0.02
Partial (with special-needs), finalized due to refusals	P	8	0.01
Partial (with special-needs), finalized for other reason	P	3	0.00
Completed interview (without special-needs)	I	4,891	3.33
Completed interview (with special-needs)	I	1,147	0.78
Fax/modem	Z	2,223	1.52
Nonworking	Z	15,668	10.68
Number changed	Z	80	0.05
Not residential	Z	7,460	5.09
GENESYS-resolved telephone numbers (nonworking, business, and fax/modem)	Z	60,350	41.14

Table XXVII. Unweighted response rate calculations for referent sample

Disposition categories and response rates	Frequency or calculated rate	Code or formula
Summary of disposition categories		
Not resolved as residential/nonresidential	25,601	UH
Out of scope (i.e., business, nonworking, fax/modem)	85,781	Z
Known household, age eligibility undetermined	4,230	UOC
Age-screened household, no child in range	22,130	XC
Known age-eligible household, special needs screening not completed	2,047	UOS
Special-needs screened, interview not completed	793	R
Special-needs screened, partially completed interview	75	P
Special-need screened, completed interview (with or without special health care needs)	6,038	I
Total	146,695	
Calculation of response rates		
Interview completion rate (ICR)	68.3	(P+I)/(UOS+R+P+I)
Age-screener completion rate (ASCR)	88.0	(XC+UOS+R+P+I)/ (UOC+XC+UOS+R+P+I)
Resolution rate (RR)	82.6	(Z+UOC+XC+UOS+XS+R+P+I)/ (UH+Z+UOC+XC+UOS+R+P+I)
Overall referent interview response rate	49.6	(ICR)(ASCR)(RR)

NOTE. Referent sample cases in Louisiana from Quarter 2, 2005 and Quarter 3, 2005 are included in the frequency counts and unweighted response rates. These include 3 cases that had not yet received any calls when dialing was stopped in Louisiana due to Hurricane Katrina.

Appendix XIII

Key Prevalence Estimates and Weighted Frequencies

Table XXVIII. Unweighted and weighted estimates of the frequency and prevalence of households with children with special health care needs

State	Total unweighted number of households	Total weighted estimate of number of households	Unweighted number of households with CSHCN	Weighted estimate of number of households with CSHCN	Standard error of weighted estimate of number of households with CSHCN	Percent of households with children that include CSHCN	Standard error of percent of households with children that include CSHCN
Total	191,640	40,221,629	44,795	8,764,639.2	62,936.722	21.79	0.152
Alabama	3,174	603,525	840	150,703.1	5,085.239	24.97	0.830
Alaska	3,930	99,331	798	18,827.0	635.851	18.95	0.641
Arizona	3,909	867,869	881	178,812.7	5,857.594	20.60	0.674
Arkansas	3,198	378,423	839	98,588.6	3,345.049	26.05	0.856
California	5,769	4,987,331	1,062	842,015.6	36,998.289	16.88	0.708
Colorado	4,070	672,549	877	133,739.5	4,483.119	19.89	0.664
Connecticut	3,759	499,106	930	119,833.4	3,832.878	24.01	0.751
Delaware	3,048	115,370	836	29,909.1	977.584	25.92	0.841
District of Columbia	3,925	58,137	902	13,089.9	445.391	22.52	0.742
Florida	4,292	2,168,289	909	445,985.0	15,651.867	20.57	0.703
Georgia	3,875	1,308,027	883	277,775.6	10,101.655	21.24	0.754
Hawaii	4,298	164,799	843	29,806.9	985.641	18.09	0.600
Idaho	3,959	211,133	850	42,463.9	1,385.025	20.11	0.656
Illinois	4,101	1,692,578	883	376,772.5	13,378.778	22.26	0.758
Indiana	3,480	830,639	905	212,972.6	7,172.297	25.64	0.834
Iowa	3,702	393,172	859	88,768.7	2,858.120	22.58	0.719
Kansas	3,351	371,784	853	91,151.9	2,965.313	24.52	0.787
Kentucky	3,356	562,359	887	149,927.2	4,854.674	26.66	0.831
Louisiana	2,837	564,284	736	132,912.2	5,409.887	23.55	0.937
Maine	3,210	168,954	866	43,423.4	1,396.319	25.70	0.814
Maryland	3,519	760,678	878	178,583.4	6,273.874	23.48	0.806
Massachusetts	3,521	857,633	873	215,851.3	7,669.640	25.17	0.858
Michigan	3,495	1,405,647	892	347,253.4	11,693.009	24.70	0.809
Minnesota	3,537	673,873	830	152,604.4	4,915.184	22.65	0.725
Mississippi	3,557	406,992	865	91,467.6	2,977.128	22.47	0.732
Missouri	3,499	814,401	933	204,233.8	6,220.287	25.08	0.762
Montana	3,773	119,205	853	25,995.1	871.075	21.81	0.719
Nebraska	3,423	246,031	834	57,030.9	1,818.257	23.18	0.739
Nevada	4,840	342,479	842	56,341.6	2,048.422	16.45	0.588
New Hampshire	3,429	175,050	906	43,911.6	1,363.666	25.09	0.772
New Jersey	4,222	1,218,631	900	253,978.9	9,279.239	20.84	0.740
New Mexico	4,333	258,025	917	50,382.9	1,585.549	19.53	0.617
New York	4,825	2,542,687	959	508,054.3	17,419.965	19.98	0.662
North Carolina	3,493	1,243,840	853	292,326.3	9,825.188	23.50	0.776
North Dakota	4,023	83,090	815	16,578.1	566.827	19.95	0.671
Ohio	3,628	1,599,573	912	381,667.1	12,405.884	23.86	0.763
Oklahoma	3,238	516,965	878	133,120.5	4,189.118	25.75	0.804
Oregon	3,657	474,131	847	103,677.6	3,334.643	21.87	0.703
Pennsylvania	3,847	1,450,256	959	343,474.0	12,049.861	23.68	0.802
Rhode Island	3,694	145,974	955	37,070.8	1,169.184	25.40	0.777
South Carolina	3,981	572,303	945	129,780.7	4,066.002	22.68	0.703
South Dakota	4,031	105,585	856	21,180.7	688.161	20.06	0.651
Tennessee	3,444	810,004	884	197,534.1	6,761.181	24.39	0.813
Texas	4,389	3,323,435	931	664,907.4	22,110.306	20.01	0.657
Utah	3,687	363,754	824	74,615.8	2,455.052	20.51	0.679
Vermont	3,471	78,761	832	18,219.2	612.316	23.13	0.765
Virginia	3,450	1,031,252	866	245,783.2	7,927.701	23.83	0.761
Washington	4,036	838,804	908	187,739.3	6,161.499	22.38	0.715
West Virginia	3,189	214,984	864	55,994.6	1,800.750	26.05	0.825
Wisconsin	3,729	764,957	908	182,734.4	5,937.752	23.89	0.758

State	Total unweighted number of households	Total weighted estimate of number of households	Unweighted number of households with CSHCN	Weighted estimate of number of households with CSHCN	Standard error of weighted estimate of number of households with CSHCN	Percent of households with children that include CSHCN	Standard error of percent of households with children that include CSHCN
Wyoming	3,437	64,970	837	15,067.9	490.114	23.19	0.750

NOTES: CSHCN is children with special health care needs. Estimates are derived from the publicly released Household File.

Table XXIX. Unweighted and weighted estimates of the frequency and prevalence of children with special health care needs

State	Total unweighted number of children	Total weighted estimate of number of children	Unweighted number of CSHCN	Weighted estimate of number of CSHCN	Standard error of weighted estimate of number of CSHCN	Percent of children who have special health care needs	Standard error of percent of children who have special health care needs
Total	363,183	73,680,291	55,767	10,221,438.5	80,003.695	13.87	0.107
Alabama	5,768	1,094,785	1,033	187,262.9	7,162.582	17.10	0.646
Alaska	7,787	188,940	1,002	22,406.0	881.167	11.86	0.463
Arizona	7,844	1,616,185	1,095	201,607.6	7,130.313	12.47	0.443
Arkansas	5,767	678,722	1,059	120,087.1	4,596.931	17.69	0.657
California	11,292	9,715,911	1,303	964,167.1	44,452.903	9.92	0.444
Colorado	7,706	1,193,203	1,077	149,000.2	5,499.851	12.49	0.457
Connecticut	6,861	831,621	1,144	133,073.4	4,756.562	16.00	0.552
Delaware	5,584	197,507	1,063	34,521.6	1,252.361	17.48	0.623
District of Columbia	6,988	111,464	1,118	16,368.9	657.081	14.69	0.557
Florida	7,640	4,101,802	1,109	551,263.2	21,035.686	13.44	0.502
Georgia	7,078	2,397,382	1,093	334,419.9	13,555.073	13.95	0.547
Hawaii	8,141	300,720	1,090	36,066.1	1,389.713	11.99	0.456
Idaho	8,368	380,195	1,044	43,306.2	1,562.196	11.39	0.412
Illinois	7,833	3,244,220	1,087	451,776.2	17,582.603	13.93	0.527
Indiana	6,672	1,602,073	1,147	266,493.9	10,395.140	16.63	0.618
Iowa	7,219	670,724	1,065	95,093.9	3,279.508	14.18	0.489
Kansas	6,623	674,361	1,091	108,023.8	4,221.157	16.02	0.606
Kentucky	6,029	981,983	1,145	181,201.8	7,037.899	18.45	0.668
Louisiana	5,309	1,098,956	916	162,116.3	7,241.998	14.75	0.651
Maine	5,857	276,746	1,090	48,890.6	1,691.882	17.67	0.602
Maryland	6,478	1,402,563	1,090	216,984.2	8,614.058	15.47	0.592
Massachusetts	6,446	1,451,318	1,093	237,838.2	9,129.590	16.39	0.610
Michigan	6,782	2,511,695	1,099	387,007.6	13,997.784	15.41	0.550
Minnesota	6,833	1,233,962	1,036	177,668.1	6,635.069	14.40	0.551
Mississippi	6,546	744,338	1,092	111,852.2	4,141.041	15.03	0.552
Missouri	6,552	1,379,128	1,169	223,069.6	7,721.356	16.17	0.551
Montana	7,315	205,347	1,042	27,853.4	1,080.270	13.56	0.514
Nebraska	6,772	430,792	1,069	62,758.7	2,269.595	14.57	0.526
Nevada	9,639	634,817	1,064	65,900.0	2,551.832	10.38	0.397
New Hampshire	6,183	304,304	1,105	50,364.6	1,729.554	16.55	0.556
New Jersey	7,869	2,158,658	1,088	286,826.0	11,319.748	13.29	0.513
New Mexico	8,376	491,780	1,143	59,535.5	2,029.062	12.11	0.417
New York	8,825	4,518,097	1,173	572,503.5	22,578.589	12.67	0.482
North Carolina	6,295	2,165,951	1,030	333,895.2	11,873.723	15.42	0.548
North Dakota	7,740	135,465	990	16,540.9	608.126	12.21	0.444
Ohio	6,920	2,754,926	1,176	445,205.0	16,269.011	16.16	0.569
Oklahoma	6,210	854,836	1,111	141,129.3	5,103.048	16.51	0.590
Oregon	7,038	857,258	1,033	116,988.3	4,148.892	13.65	0.482
Pennsylvania	7,083	2,805,745	1,172	430,640.0	16,248.680	15.35	0.561
Rhode Island	6,751	243,312	1,203	41,782.5	1,486.767	17.17	0.587
South Carolina	7,157	1,035,619	1,167	157,801.5	5,566.757	15.24	0.524
South Dakota	7,998	187,513	1,076	23,644.1	841.184	12.61	0.449
Tennessee	6,337	1,397,269	1,114	229,744.3	8,828.857	16.44	0.610
Texas	8,518	6,419,671	1,176	806,746.0	29,390.718	12.57	0.454
Utah	8,540	752,229	1,014	82,502.5	2,898.634	10.97	0.388
Vermont	6,283	132,812	1,012	19,936.8	728.305	15.01	0.536
Virginia	6,234	1,826,706	1,062	289,176.4	10,700.272	15.83	0.576
Washington	7,514	1,495,806	1,122	214,582.8	7,851.736	14.35	0.512
West Virginia	5,683	381,181	1,103	69,567.0	2,557.408	18.25	0.647
Wisconsin	7,193	1,295,783	1,145	197,791.1	7,161.747	15.26	0.533
Wyoming	6,707	113,910	1,027	16,456.2	578.385	14.45	0.505

NOTES: CSHCN is children with special health care needs. Estimates are derived from the publicly released Screener File.